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R. T. VANDERBILT CO.

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230 Park Ave., New York

LET'S KEEP GOING FORWARD!

TESTING rubber compounds at room temperature does not tell all that should be known about a product if it is ever subject to higher temperatures in service. Testing at higher temperatures does give some much needed information.

THE recommendations we make embodying the use of our materials for age and heat resistance are tried and proved by both hot and cold testing. It will pay you to consider them.

●

The September-October VANDERBILT NEWS (to be mailed October 5th) is devoted to testing at high temperatures.

NRA WE DO OUR PART

INDIA RUBBER WORLD

Published at 420 Lexington Avenue, New York, N. Y.

Volume 89 **New York, October 1, 1933** **Number 1**

Modern Heat Insulation – I

B. W. Wetherbee[1]

IT SEEMS inevitable that waste is associated with the unseen; either the actual waste occurs in such small amounts that the degree is unappreciated, or the process of waste is an invisible one and, therefore, even more insidious. The annual heat losses in the average factory amount to a staggering total, and yet there is plenty of good conservative basis for stating that by an overhauling of the insulation, the loss might be cut down 80%—in many cases as high as 95%. Generally speaking, the high degree of specialization in the insulation industry is not appreciated. About 30 years ago, when hydrated magnesium carbonate, commonly known as "magnesia," was first introduced to the insulation field, it constituted such an epochal improvement that for a great many years it was considered the solution of all insulation difficulties. So it was, until developments in higher temperatures and pressures demanded parallel improvements in insulation. Since about 1915 there has been a great increase in the use of high pressure and superheated systems which have raised operating temperatures from 400°F. to 900°F., and in the case of power plants using relatively small closed-circuit systems and mercury vapor, temperatures have ascended into the dizzy heights well above 1,500°F. It happens that magnesia begins to calcine about 550°F. and above this temperature fails mechanically to be a good material for practical insulation. Owing to this fact, other materials had to be developed for high temperature work.

Armstrong Rubber Co.

Tire Vulcanizers and Their Piping System Should Be Properly Insulated

As a result of research, more than a few manufacturers can boast of a line of products which will cope with temperature ranges from below 0°F. to the highest industrial temperatures.

Although the temperatures in even the most modern rubber plant are somewhat more modest, it is not unusual to find a complete range from 0° to 1,500°F. if one progresses from the refrigerating systems to the boilers. Heat is really the backbone of a rubber plant and also one of the chief overhead items. In these days of rigorous competition and strict economy a preliminary survey of the plant insulation will in most cases indicate sources of heat losses which amount to astonishing totals throughout the year. Because the production of heat is in itself a wasteful procedure (in some cases, only 5% of the energy originally in the fuel can be made available for useful purposes), any preventable waste of the produced fraction should certainly be prevented. A somewhat exaggerated, but none the less effective, method of indicating the heat losses from non-insulated equipment is to state the dollar cost of the heat losses which take place over the period of one month from a given length of uncovered pipe.

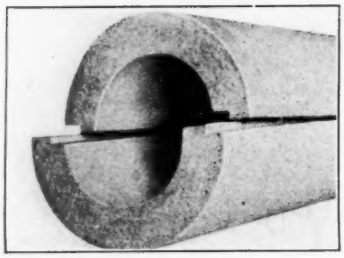
COST OF HEAT LOSSES
100-Foot Bare Pipe (Horizontal), per 30 Days

Pipe Sizes in Inches	10 Lbs. Steam (239.4°F.)	200 Lbs. and 100°F. Superheat (487.9°F.)
1	$ 1.91	$ 12.56
18	36.10	151.20

Although it is rare to meet these conditions in a plant

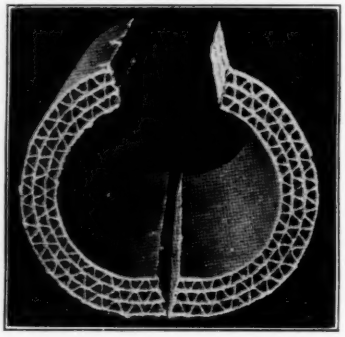
[1] Consulting chemical engineer, Cromwell, Conn.

which pays any attention to insulation, it is only because they portray a vivid picture that the above figures are given. But as a matter of fact, if they seem too high, it should be noted that even small equipment for process work wastes more heat proportionately. By bringing the insulation of the plant thoroughly up-to-date it is possible to prevent the largest part of these losses. In addition to the economies in heat wastage, the benefits extend to other important factors such as: the easing of strains on pipe and equipment systems by leveling off the sharp rises and falls in temperature of the system when the load is put on or taken off; making possible much more exact temperatures, which in itself is of great importance in a rubber plant where uniformity of drying, curing, etc., is of such moment; the comfort and safety of the workmen, which certainly add to the efficiency of the factory.



Ehret Magnesia Mfg. Co.

Broken Joint—Single Thickness



Keasbey & Mattison

3-Ply Air Cell

The factory superintendent or chief engineer who is making an inspection of the insulation should keep 3 essentials in mind: what to cover; with what thickness; and with what materials. The first point is easily covered by a rule consistent with good engineering practice: it is to cover all surfaces where the heat is to be utilized and/or salvaged. Details of this point will be covered later in this paper. As far as the second point is concerned, one will find elsewhere a great many words written, a great many recommendations for arriving at the economical thickness of insulation. For instance, it is possible to work out mathematically the correct thickness. The serious objection to this method is that it does not take into account the multitude of variables met with in practical application.

The only satisfactory way to insure against insulation troubles is to have a thorough survey of the plant made by one competent to deal with practical problems and then adhere to the resulting specifications as rigidly as possible. The types of insulating materials used will be determined by operating temperatures and service conditions. The quality of the materials used should not enter the discussion; it should not be necessary to mention the fact that cut-rate insulations cost many times more to install than do first-class materials. Good authorities have determined the heat losses of poor insulating materials and in some cases have found them to be actually higher than the losses from the same pipe *uninsulated*.

Probably the most overworked word in the insulation field is "efficiency." In vain have many engineers endeavored to emphasize that from a standpoint of practical application it has no significance. The laboratory method of determining the efficiency of an insulating material consists in measuring very carefully the heat loss in B.T.U.'s per square foot of bare pipe surface per degree temperature difference between pipe and the surrounding air. When this figure is obtained, there is but a single change made in the testing equipment, that is to place on the bare pipe the insulation, kind, and thickness to be tested. The latter figure is subtracted from the bare pipe loss, and the result divided by the bare pipe loss.

The efficiency of an insulating material varies with changes in the testing conditions; for this reason it is impossible for an engineer to use an efficiency determined from one set of conditions to calculate the heat losses from his own particular equipment. One probably asks what the value of this figure is. As in any industry, the necessity of a yardstick to measure progress often discounts the obvious fact that the stick is not directly applicable to practical performance. The usefulness in this case arises from the fact that the "efficiency" is an index or reference point for all materials. For the reasons above, practical insulation specifications should avoid referring to the "efficiencies" of materials. Rather, let them refer to permissible thermal losses per unit area of surface in thermal units per hour, with full descriptions of special operating conditions. This is the method of writing specifications which has the approval of insulating engineers, and it is to the advantage of the user to state his requirements in this fashion because to a large degree the burden of responsibility for making a satisfactory installation is thus put in the hands of the insulation manufacturer or contractor.

Thermal conductivity of insulating materials is not necessarily a correct guide, though one will see it quoted frequently. For example, thermal conductivities of all materials increase with the temperature; the thermal conductivity of any material should be stated as referring to a section one foot square and one inch thick. The determination of the thermal conductivity is usually made on a flat section. It would be incorrect to apply this figure to other than a flat section because the thermal losses increase as the curve of the surface increases. Heat radiation from a flat surface in a still atmosphere takes place in parallel lines, but from the curved surface of a pipe-covering for instance, the heat waves travel into an ever-widening path. The majority of good insulating materials have a low thermal conductivity, but paradoxically this does not mean that a substance having high thermal conductivity is, for this reason alone, unsuitable for an insulation material; this point will be explained later.

A survey of the multitude of products being used today for insulating purposes is interesting not only to show the variety of materials used, but more importantly to indicate the efficient means of preventing undesired heat transfer. Too often it is the tendency of individuals to avoid specialization; as a consequence, a product which works well under certain conditions is frequently used for completely different purposes on the flimsy basis of its merit in the former case. Many plants have insulation specifications which would be perfectly all right if adhered to, but through the years it is inevitable that substitutions of other materials occur. In some cases where the result tends toward modernization, there is naturally no objection to using alternate materials, but more often the results are not so fortunate. In any event it is certain that specifications should occasionally be looked over and brought up-to-date. Although this account of the various products in use today touches only important classes it should, however, indicate the requirements of general conditions.

Low-temperature insulation for refrigerating purposes is confined to comparatively few materials. Cork, natural

(*Continued on page* 34)

Coloring Rubber

A Review of United States Patents Relating to the Coloring of Rubber

Joseph Rossman, Ph.D.

THE early methods of producing colored rubber goods consisted in using suitable mineral colors. Only a very limited number of mineral pigments could be used for this purpose because many of them reacted with sulphur, forming dark or black compounds.[1]

The development of modern vulcanization accelerators has made it possible for the rubber manufacturer to incorporate in his products a great variety of the rich organic dyestuffs which hitherto could not be used owing to their decomposition during vulcanization. Numerous difficulties, nevertheless, are involved in using organic dyes which must be carefully studied to produce uniform products having the desired properties. Colors for rubber ordinarily must be unaffected by dilute acid or alkali. Rubber flooring and rubber sponges, for instance, must not be colored with dyes which are affected by alkalies. Rubber articles used for personal wear must be stable to perspiration. The organic colors must be chosen with regard to their fastness to light. The effect of the particular accelerators or of other ingredients compounded with the rubber must be considered.[2]

Many United States patents have been granted during the last few years involving the coloring of rubber. The pertinent disclosures of these patents are given in the following paragraphs.[3]

1. Malcolm, 51,846, Jan. 2, 1866. Zinc sulphide and vermilion or other pigment are compounded with rubber. Patent 51,849, Jan. 2, 1866, covers the product made by this process.

2. Malcolm, 51,847, Jan. 2, 1866. Zinc sulphide is compounded with rubber. After vulcanization the rubber is dyed by immersing in a dye bath. Patent 51,848, Jan. 2, 1866, covers the product thus made.

3. Halliday, 99,885, Feb. 15, 1870. Oxide of antimony is treated with garancine and cochineal prior to incorporation in rubber.

4. Eilertsen, 987,451, Mar. 21, 1911. Stock for rubber dentures is made as follows. White rubber with zinc sulphide or oxide is dissolved in benzine. The coloring matter composed of 4/5-part of alizarin and 1/5-part of carmine is ground fine. This coloring matter is mixed with the rubber solution, and the mixture is triturated in a ball grinder. The mass is poured on plates for desiccating it. Subsequently the material is passed through rolling machines which give it the thickness that is desired.

5. Gottlob, 1,113,614, Oct. 13, 1914. This patent is one of the early ones which compounds an organic azo dye with rubber prior to vulcanization. The following example is given, the parts being by weight: 100 parts of rubber are mixed between rollers with 10 parts of helio fast red RL, 10 parts of sulphur, and 100 parts of white of zinc, and the mixture is vulcanized at 170° C. A beautiful bright red is thus obtained. The following types contain a wide range of shades which have given satisfactory results: azo colors, such as helio-bordeaux BL, helio fast yellow 8GL extra, ceres orange, etc.; naturally a large number of other organic coloring matters can be used.

6. Ditmar, 1,113,759, Oct. 13, 1914. According to this patent organic vat dyes are compounded with rubber. The following example is given, the parts being by weight: 100 parts of hard rubber are mixed between rollers with 6 to 8 parts of thioindigo scarlet R; the mixture is vulcanized at 170° C. A beautiful bright violet-pink ebonite results. The following are satisfactory types: thioindigo scarlet R, pyranthrene, indanthrene blue, thioindigo red B, flavanthrene, anthracene colors, e.g. the colors described in British Letters Patent No. 7398/01.

7. Spence, 1,122,653, Dec. 29, 1914. This process for dyeing rubber consists in treating the rubber with an aromatic amine in aqueous solution, then subjecting it to a dye forming bath. The following examples are given.

(1.) White Ceylon crepe rubber is soaked at ordinary temperature for about 2 days in a 2% aqueous solution of aniline, then rinsed with water, or put through the washing mill, and then immersed for about an hour in a 2% solution of nitrite with 4% of sulphuric acid in ice-cold water.

(1a.) Rubber treated according to (1) gives with aniline on the fiber of the rubber, aniline yellow in the usual way.

(1b.) Rubber treated according to (1) gives with 2% beta-naphthol-sodium solution a blood-red dye in the fiber of the rubber itself.

(2.) A length of ordinary white rubber tubing such as is used for laboratory and other work is soaked for 3 days in a 2% aqueous solution of aniline (kept slightly warm) so that the solution is both in and around the tube. It is then completely immersed for 2 hours in a 2% solution of nitrite in ice-cold water, to which dilute sulphuric acid is added from time to time until the strength of the acid in the bath reaches 4%. White rubber tubing, so treated, when washed and treated with

---

[1] See "Rubber Compounding Practice," Webster Norris, INDIA RUBBER WORLD, May 1, 1928, pp. 55-57, for different mixings using mineral colors. See also "Metallic Powders in Rubber Goods," Webster Norris, *Ibid.*, Mar. 1, 1929, pp. 53-55, for ornamental effects produced by metal powders.

[2] See "Rubber Compounding Ingredients," Webster Norris, INDIA RUBBER WORLD, June 1, 1928, pp. 57-59 for a discussion of organic colors for rubber goods. Other articles of interest are "Organic Dyes in Vulcanized Rubber," T. J. Drakeley, *Trans. Inst. Rubber Ind.*, 2, 42-52 (1926); "Organic Rubber Colors," W. J. S. Naunton, *Ibid.*, 4, 68-84 (1928); "The Coloring of Cold Cured Rubber," W. E. Sanderson, *Ibid.*, 4, 22-39 (1928); "Colors Used in the Rubber Industry," G. F. Thompson and E. V. Bratby, *Ibid.*, 7, 129-43 (1913); "Organic Rubber Colors," F. Harriss Cotton, *India Rubber J.*, 80, 727-29, 865-67 (1930) and 81, 413-14 (1931), which contains a bibliography; R. Ditmar in *Caoutchouc & gutta-percha*, 2, 7951-52, 8100, 8103, 8180, 8183, 8364, 8367 (1914) enumerates many dyes for rubber; also in *Gummi-Ztg.*, 29, 85-87 (1914). A comprehensive article was published by F. Jacobs, "La Coloration du Caoutchouc," *Rev. gén. caoutchouc*, 7, 58, 9-16; 59, 9-18; 60, 9-17; 61, 31-36; 62, 37, 39, 41, 43, 45, 47, 49, 51; 63, 31-35; 64, 17-21 (1930).

[3] For a list of foreign made organic dyes suitable for coloring rubber see F. Jacobs, *Kautschuk*, 7, 22-26 (1931). For United States patents dealing with variegating or ornamenting rubber see "Ornamented Rubber," Joseph Rossman, INDIA RUBBER WORLD, Apr. 1, 1929, pp. 61-64, and May 1, 1929, pp. 65-67.

2% beta-naphthol-sodium solution, gives a fine brick-red color. By aging this tubing in storage, small irregularities in color such as may appear throughout the mass, when freshly dyed, disappear.

(3.) Sheets of white plantation rubber were impregnated with a nearly hot, saturated solution of beta-naphthylamine in water for a short time (12 hours, for example) and azo Turkey red was produced in the rubber by diazotization and coupling with beta-naphthol.

(4.) A sheet of rubber prepared by vulcanizing mixture of equal parts of white plantation rubber with zinc oxide and 5 parts of sulphur was immersed in a nearly hot, saturated solution of alpha-naphthylamine in water (3 days), washed, and alpha-naphthylamine Bordeaux was produced in the sheet by diazotization for 2 hours and coupling with beta-naphthol. The color becomes uniform on and through the sheet on aging.

(5.) Sheets of white plantation rubber were immersed for 2 days in a 0.5% aqueous solution of dianisidine. The impregnation of the rubber by the base may also be accomplished with suitably concentrated solutions of salts of the base with the addition of the equivalent quantity of soda solution. The impregnated rubber was diazotized and coupled with beta-naphthol. A dark reddish-violet dyestuff was produced in the rubber which could not be washed out by continued washing on the mill and was effective in coloring articles manufactured from this rubber.

8. Harrison, 1,239,180, Sept. 4, 1917. Rubber balloons are colored by dipping them while on their forms after vulcanization in an aniline coloring matter dissolved in a solvent of rubber such as benzol, carbon disulphide, or carbon tetrachloride.

9. Creque, 1,251,182, Dec. 25, 1917. The process of ornamenting thin rubber articles consists in pickling the article on its form in a rubber solvent to distort the surface of the article by forming porous ridges, while still on the form, and immersing the article in a coloring solution to allow the porous portions to absorb more of the coloring solution than the remaining portions which remain tight to the form.

10. Somerville, 1,309,703, July 15, 1919. By this method decorative rubber articles are made by compounding a mass of unvulcanized rubber with a light-sensitive material, forming the compound into the article desired, and subjecting its surface to light rays conforming with the desired design, and then subjecting the article to the action of heat. For further details see India Rubber World, May 1, 1929, page 65.

11. Ostromislensky, 1,320,166, Oct. 28, 1919. This process comprises subjecting the rubber to a vulcanizing dye containing oxygen in the presence of an anti-aging material and an accelerator, and vulcanizing. In carrying out the process 10 grams of rubber are mixed with 2 grams of aurotin tetranitrophenolphthalein which is a tetranitro-triphenylmethane derivative of the phthalein group, which is an organic nitrocompound dye, 0.1-gram of naphthylamine and 2 grams of lead oxide. The mixing process is carried on in an ordinary mill and then vulcanized. The rubber produced is soft, and its color is reddish brown. It is especially resistant to aging not only under normal temperature, but also when heated, and thus finds a particular application for use in packing, steam hose, and in all cases where the vulcanized rubber must withstand the action of heat in use.

12. Ostromislensky, 1,342,457, June 8, 1920. The process comprises adding to rubber sulphur an organic dye normally injured by the sulphur and zinc oxide and vulcanizing. The organic dyes are added to a vulcanizable mixture comprising rubber, sulphur, amine, and a metallic oxide. In carrying out the process 10 grams of rubber are mixed with 3 grams of erythrosine, 2 grams of zinc oxide, 0.8-gram of sulphur, and 0.2-gram of piperidine-piperidyl-dithiocarbamate. The mass is thoroughly mixed at normal temperature and heated in a mold at 140° C. without access of air for 10 minutes. The product has a raspberry-red color.

Vulcanization with eosin, alkali-blue, and cinnamylidene-fluorene is conducted at normal temperature. For example, 3 grams of eosin or cinnamylidene-fluorene are mixed with 10 grams of rubber, 0.8-gram of sulphur, 0.2-gram of piperidine-piperidyl-dithiocarbamate serving to lower the required temperature of vulcanization. The mixture left in the mold at ordinary temperature vulcanizes completely within one month. Piperidine-piperidyl-dithiocarbamate serves to prevent injury to erythrosine or other dye, owing to the action of sulphur, during the vulcanizing process. This protective action appears to be due in part at least to the lowering of the temperature of vulcanization together with the acceleration of vulcanization due to piperidine-piperidyl-dithiocarbamate and zinc oxide, both of which are accelerators.

13. Witten, 1,484,919, Feb. 26, 1924. The process of manufacturing a gold colored balloon consists in milling into the rubber a quantity of powdered aluminum, reducing the resultant mass to solution by adding a suitable solvent, adding to the solution an oil soluble yellow dye, providing a form, building up an article thereon by successively dipping the form into the solution, subjecting the article to vulcanization while on the form.

14. Glancy, 1,518,062, Dec. 2, 1924. The process consists in dipping rubber articles into a dyeing bath and immediately removing therefrom. The bath consists of a commercial dye dissolved in an organic solvent such as naphtha, benzol, or carbon tetrachloride. For example, 0.1% oil yellow, a mono azo dye, dissolved in naphtha makes a satisfactory bath.

15. Meyeringh and Wijnand, 1,559,343, Oct. 27, 1925. Sheets of plantation rubber are passed through a dye solution, which contains a small percentage of sulphur. The solution may be composed of organic or inorganic coloring matters, which have been dissolved in organic or inorganic solvents. The solvent must be able to dissolve the dye, as well as the rubber. As solvents, for example, may be used benzol and its homologues, carbon disulphide, and the like. The sheets are covered with this solvent dye solution, by sprinkling, spraying, or passing the sheets through a bath containing the dye solution.

16. Teague, 1,660,213, Feb. 21, 1928. A method of coloring latex consists in dissolving a water insoluble dye in a solvent and emulsifying the solution in latex. For further details see India Rubber World, Aug. 1, 1932, page 34.

17. Bridgwater, 1,663,436, Mar. 20, 1928. The following example is given using the sodium salt of diazotized 2-chlor-5-toluidine-4-sulphonic acid coupled with beta-naphthol as a dye:

	Parts
Pale crepe rubber	100
Zinc oxide	3
Sulphur	2.5
Di-ortho-tolylguanidine	0.5
Sodium salt of diazotized 2-chlor-5-toluidine-4-sulphonic acid plus beta-naphthol	0.5

This compound is vulcanized for 40 minutes at 40 pounds' steam pressure. Any other organic accelerator which does not produce dark colored rubber, such as diphenyl-guanidine, hexamethylene-tetramine, etc., may be used. This rubber compound has a bright orange-red color after vulcanization, which is not seriously affected by storage or exposure to the elements.

(To be continued)

Rubber Playthings

A Wealth of Toys in Sundry Sizes and Shapes for Children and Pets

Sponge Rubber Products Co.

Sponge Rubber Toys

WHEN I see the adorable rubber toys now being created for children, I wish I were young again. Even now, with the weight of my years upon me, I find it impossible to resist these fascinating playthings.

Indeed rubber is a most suitable material for this purpose. It has no sharp edges to injure youngsters or damage furniture and floors. Even the most destructive child will have difficulty in breaking a rubber toy; the abuse it can stand is amazing. Nor can water harm it. In truth its sanitary feature makes rubber a veritable blessing in disguise. By its very nature rubber can assume a variety of sizes and shapes for play goods undreamed of but a short while ago. The price, moreover, will not tax the pocketbooks of fond parents and maiden aunts who delight in pampering the young.

Faultless Rubber Co.

"Safe-Play" Mottled Block

To list every individual type of rubber toy would require more time and space than can be spared. From the few here illustrated and described, however, you may gain some idea of that phase of a great industry dedicated to Very Young America.

Consider sponge rubber, for example. What toys it makes! They'll charm any youngster. Who could ignore a little black Scottie with red tongue sticking out; or a multi-colored elongated doll with a detachable wrapper also of sponge rubber? (In fact some one in our office found these toys so irresistible, our samples suddenly disappeared.) Sponge rubber ducks and chicks also are quite cunning with their spread wings, open beaks, pert expressions, and gay colors. Many of these products, since they float, add to the lure of bathing for children.

One firm boxes sheets of sponge rubber, known as Spunjy Lastik, in several popular colors. The child can cut or otherwise fashion these sections into any shape or article desired. The pieces are then rubber cemented together. Some of the above mentioned sponge rubber goods are the result of this playtime delight.

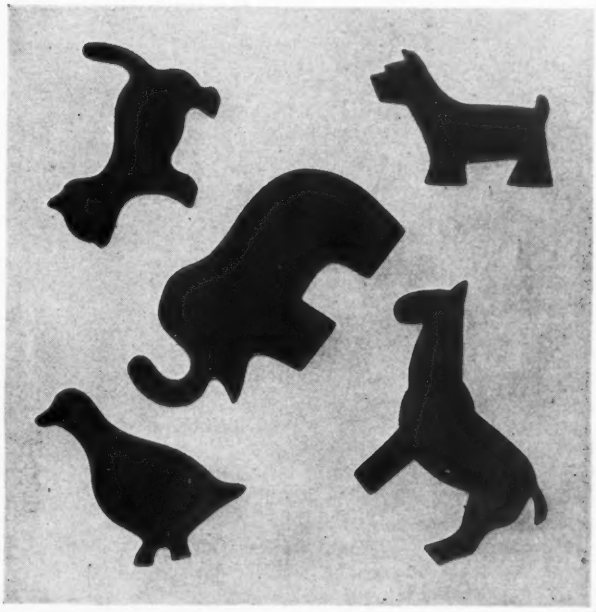
Something new in dolls has just been released. It is entirely of sponge rubber highly decorated in gay, fast, and non-poisonous colors. All the joints are the ball and socket type, making assembly very easy as no strings, rivets, or wires are used. If the little tot should pull out a leg, an arm, or even the head of her doll, an older person in a few minutes can replace the dislocated member in its socket. The joints, moreover, are all covered by a rubber apron to exclude dirt and dust. Being of sponge rubber, this plaything is lighter in weight than most dolls; therefore a very little girl can easily handle a large doll.

Sponge rubber blocks in square and novel forms will satisfy the builder urge in every boy. In bright colors with their contrasting letters, numbers, and pictures thereon, they invite constant use. One company markets blocks imitating dice, in white rubber with black markings.

Another amusing novelty, also of colored sponge rubber, consists of animals cut in size and shape exactly to resemble animal crackers—and their life is infinitely longer than that of the edible variety.

Sponge rubber balls in all sizes and a wide range of brilliant hues also are favorites.

A specialty recently introduced consists of a box holding 6 sheets of rubber, each a different shade, from each of which the following have been died out: a duck, a cat, a dog, a horse, and an elephant. The child may use this plaything as a modified jigsaw puzzle to put the animals in their respective places; or he may entertain himself merely with the cut-outs. Some precocious youngsters will not be above stenciling designs of their own inventive



Maxwell Rubber Products Corp.

Sheet Rubber and Colored Cut-Outs

Miller Rubber Products Co., Inc.

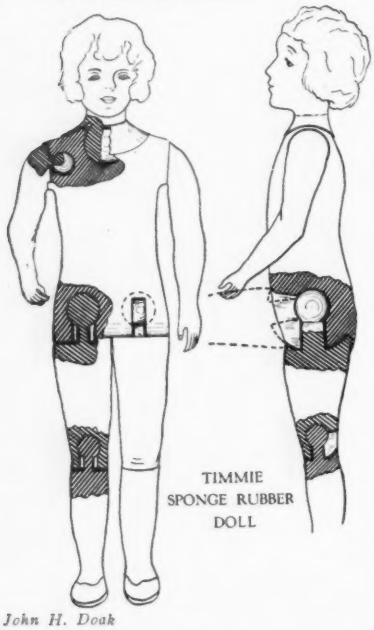
"My Dolly"—All Rubber

Miller Rubber Products Co., Inc.

Inflated Rubber Toys

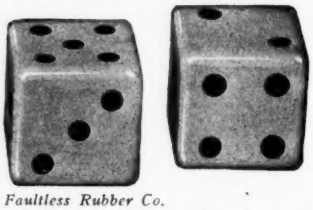
Anderson Rubber Co.

Peter Rabbit Toss-up



John H. Doak

Sponge Doll with Ball and Socket Joints



Faultless Rubber Co.

Rubber Blocks with Dice Decorations

Barr Rubber Products Co.

Timmie Dishes

genius on the rubber sheets.

Animals, ferocious and gentle, made up into toys have an undeniable allure. Whether the beasts are inflated, hard, soft, or sponge rubber matters not; the child is completely won. The menagerie of toyland includes lions, tigers, elephants, monkeys, horses, sheep, cats, dogs, alligators, and mice. In fact, every animal that breathes will find himself reproduced in rubber at some time or other. One manufacturer cleverly finishes off his creations in suede or silk plush.

Inflated toys, too, are best sellers. They also appear in a great variety of sizes and shapes, often in natural colors, ranging from human beings, animals, reptiles, denizens of the deep, birds, boats, dirigibles, and skeletons to the devil himself.

Tamby toys, each molded of one piece of solid rubber, can withstand much service. These interesting playthings in gay colors assume such forms as animals, soldiers, and even crocodiles and alligators.

Rubber dishes, also very popular, come in pretty colors charmingly decorated. What little girl would decline to play house quietly or eat her luncheon if she saw a set, just like mother's, of these quaint dishes at her command? Nor is their use confined to the nursery, for grown-ups can utilize them outdoors.

Balls and balloons are now so matter-of-fact that not much space need be devoted to them. Occasionally, however, a novelty is introduced in this field that merits attention. Such a one is the balloon Peter Rabbit Toss-up, dressed in character. Equipped with cardboard feet, it inflates 18 to 20 inches high and is packed in an attractive 2-color envelope.

Following the jigsaw craze, balloons, known as Radium, inflating 13 inches, now may be had in packages, the picture on the cover of which is outlined to be cut apart and then put together again. This series embraces Bo-Peep, Mother Goose, Little Red Riding Hood, and the Three Bears.

No story on toys would be complete without some reference to dolls. Previously they had been made with only arms and legs of rubber. Now, though, the head also, and in some instances the entire body, are fashioned of rubber and hand-painted in natural tones. The result is a most attractive companion for playtime that no little miss could shun. Baby dolls in several sizes, life-like in looks and texture, are fascinating; so are the more grown-up models.

Many accessories for these doll toys likewise utilize rubber. Take, for instance, the panties for Dolly and the miniature hot water bottle and microscopic nipple on tiny nurser, not to mention the bit of sponge for bathing—all patterned after a real child's things. Rubberized fabrics, moreover, are found in Dolly's bathinette and stroller. One concern features a combination of an all-rubber doll 16 inches high completely dressed even to her rubber panties, and a carriage that sports a rubber covered handle and rubber tires.

Such tires, by the way, are found nowadays on the wheels of all sorts of toys, no matter how small.

Nor are children the only ones for whom rubber playthings are created. Pets, particularly cats and dogs, offer a lucrative market for toy makers. Hard and soft balls, mice, balls resembling cats' heads, those with catnip to tantalize Tabby, rings, and bones all sell well. Indeed so great is the interest in this field that constant improvement and development are effected. A recent innovation is scenting the rubber with a chocolate odor to enhance the toy's appeal. Introduced only a short time ago, such scented toys have won instant and widespread favor. This scenting of rubber, incidentally, is not restricted to articles for pets.

Even now, as this is being written, in the ranks of the rubber industry are men working on new goods to make life a little brighter for the kiddies—a most worthy occupation.

Sources of Waste in Tire Manufacture—IV

Frank Allan Middleton

IT MAY safely be assumed that the greatest bulk of inner tubes is nowadays manufactured by the extrusion process, after which the valve pad is affixed, the valve hole punched, the valve inserted, and the tube ends skived, buffed, and spliced, when the tube is vulcanized in a circular mold under an inflation pressure of around 80 pounds per square inch.

This process is not, of course, universal. The conversion from the former methods employing calendered gum and mandrel curing has been slow in some quarters, due to the inability to scrap an expensive plant and install new machines. Manufacturers are endeavoring, however, to work into the new methods as rapidly as possible, and it might prove of greatest worth, therefore, to confine this short treatment of inner tubes to the method of manufacture outlined above.

The remarks on tubing in Part II[1] of this series apply with particular force to the production of inner tubes by this method. Not only are inner tube stocks of a "lively" nature, tending to produce higher temperatures within the head of the machine because of the increased work demanded by them, but curing times are short (as low as 7 minutes with thin-walled articles), which condition enhances the vulnerability of the rubber to scorching. The most expensive scrap items arise, however, in subsequent stages of manufacture.

After tubing, the tube lengths must be accurately cut according to specification, and the gage and flat width (signifying diameter) checked. If gage and width are not accurate to within 2%, and the length errs by more than ¼-inch, the tube should not be passed on for assembly, because of the danger of thin walls (of a localized or general character) developing during cure.

Affixing the valve pad and inserting the valve, while simple operations, often occasion a high proportion of cured tube scrap, in the former case through insecure attachment of the pad, and in the latter as the result of either insecurely seating the valve or employing the wrong size or design of valve. Insertion of the wrong valve may be remedied after cure by the following simple means, however, although, naturally, the existence of a simple remedy is by no means any justification for laxity in carrying out the operation. A small hole is cut in the tube opposite the valve, and the metal component extracted through it; the correct valve is inserted by the same agency, a quick-cure plug of tube stock is applied to the hole; and the procedure is completed by vulcanizing the plug.

The pad consists of a number of plies of chafing fabric, frictioned with tube gum, decreasing in size toward the exterior surface. Separation between the plies, or between the bottom ply and the tube surface, is traceable to any of the following causes: (a) inadequate washing with solvent, by which dusting chalk is retained by the pad or tube; (b) trapped air; (c) insufficient pressure on application to the tube.

A further trouble that has at times arisen in connection with the valve seating is the ready appearance of sulphur bloom after cure. This condition results from the thermal conductivity of the metal valve, especially if this part possesses a large base so that the full curing temperature cannot be attained over a relatively large area. If, however, a much faster curing stock is processed upon the valve pad to overcome the difficulty, there is a risk that cracking between tube and pad will supervene, even before the tube has experienced service.

Probably the most prolific cause of cured tube scrap, however, is inefficient splicing. Separation at the join may result from causes similar to those enumerated in connection with valve seating-pads, but there is also the contingency of over-storage resulting in the loss of adhesiveness; which, nevertheless, will usually be evidenced by a faulty product only when the tube ends have been incompletely buffed. It is safest to have all tube ends, which have been prepared for splicing, thoroughly examined before joining up, for the reason that, although defective splices can be cut out and the shortened tube rejoined with quick-cure cement to make a second-grade tube (and sometimes, but not very frequently, a first-grade of a smaller size), these operations are expensive compared with merely providing for the inspection of the prepared tube ends before splicing. Besides, it is not always easy to detect incipient separation during the examination of the finished product.

Associated with the difficulties of producing trouble-free splices is the condition sometimes known as "bell ends." As the words imply, this is characterized by a spreading of the tube ends until the tolerance limit for the flat width is exceeded. It results, primarily, from a soft condition of the extruded tube and is produced at the time of application of pressure for forming the join. If allowed to pass undetected, it is probable that a scrap tube will result either from a pinched or buckled splice or as the result of thin tube walls near the junction.

Obviously the way to prevent this condition is to have the tube measured before molding and to impress upon the person so charged that any scrap from this cause is his direct responsibility.

The final inspection to which reference has been made takes the form of inflation and immersion in a tank of water, when examples of separation at valve pad or splice, improper seating of the valve, or perforations due to the presence of foreign matter or pinching of the tube between the mold halves at the curing stage are manifested by the appearance of air bubbles. On emerging from the tank, the tubes are examined by girls trained to observe external blemishes and to detect by touch light places in the tube walls. Small defects can be repaired with quick-cure stock; but if walls are seriously thin, the only course open is to scrap the affected tubes.

Tube walls evidencing too low a gage in localized

[1] India Rubber World, Aug. 1, 1933, pp. 29-30, 35.

patches may result from faulty tubing, e.g. off-balance or badly spider marked, but they are sometimes the product of a soft condition of stock at the tuber, particularly in the case of small sizes with thin walls. The reason appears to be that air, trapped between the tube and the mold upon insertion, is retained until vulcanization commences, as the result of the weakness and lack of resilience of the tube. The amount of depression so produced is sufficient seriously to weaken a tube wall already designed to conform to exceedingly close limits.

A useful, and often illuminating, check upon the efficiency and accuracy of the inner tube department is a regular comparison of the number of tubes extruded with those finally delivered to the warehouse. The extent of the disparity will reveal how significant can be the cumulative effect of the successive occasions for waste and error present throughout manufacturing.

If to this is added a computation of the *actual,* as against the apparent, productive time of the tubing machine, there will probably be further cause for disquietude. By this remark is meant that, if the actual running time of the machine be expressed as a percentage of its working day, the unproductive time in which dies, set-ups, and mandrels are changed will frequently reduce this figure to something considerably less than might be expected. The dismantling of the machine's head; cleaning out; replacing mandrel, die, and other components; and setting the gage of the fresh size on resumption are operations which together occupy as much time as the production of 150 tubes of medium size.

It is apparent, therefore, that to restrict the daily production ticket of the tuber to as few sizes as is humanly possible is worth the attention of the production manager, who must be assisted in every way possible by the production scheduling and sales organizations. This aspect of waste control will be more fully reviewed in a subsequent article; but it is of such significance in this particular connection that excuse is hardly necessary for briefly introducing the subject at this point.

As in the case of inner tubes, the method of airbag manufacture has changed from that in which calendered sheet is plied up on a mandrel for producing the tubular section, to that in which the tubing machine produces the tube complete with "base." Here again, of course, the aforementioned remarks on tubing are applicable, except that the particular characteristics of the rubber stock and the airbag section tend to emphasize 2, at least, of the difficulties associated with the operation of the machine. These are spider marks and shrinkage.

Many experiments have been conducted to discover how best to defeat the detrimental effects of the spider, by altering such factors as the number of spokes and their disposition around the hub, the length and type of mandrel, the plasticity of stock, the speed of the machine, etc. Using the orthodox extruding machine, it has been found that a 3-spoke spider permits of a better product, if used in conjunction with a relatively long mandrel and stock of plasticity regulated carefully to a predetermined figure, which will depend, of course, upon the particular apparatus used to determine plasticity values. No purpose would be served, therefore, by quoting actual values. A practical limit is soon reached, however, in increasing the plasticity of the stock to overcome the difficulty of spider marks; beyond a reasonable value the service of the finished product is impaired; while collapse during cooling in storage may result in deformation which prohibits successful molding.

The disposition of the spokes which appears most satisfactory takes advantage of the fact that the airbag is tubed with its base as an integral part. Where the article is thickest, as at this point, the stock flows most readily through the die, and the resistance of a spoke placed there is thus partly counterbalanced. The remaining 2 spokes are spaced equidistantly from it so that their effect falls at the shoulders of the airbag. This condition is by no means ideal; but if the stock is sufficiently plastic to prevent the reduction in gage from resolving themselves into definite lines of weakness (which lead to cracking in service), the flexibility accorded the shoulders of the airbag need not be considered detrimental.

The amount of shrinkage undergone by the airbag after tubing largely depends upon the plasticity of the stock, both in an indirect and a direct manner. A stiff condition will result in excessive expansion of the rubber as it emerges from the die, with the result that the take-off belt must be speeded up to stretch the tube down to the required periphery and gage. On cooling, the airbag will tend to return to its first dimensions, and an increase in gage and periphery will be evidenced. With gum of excessive plasticity, not only may the necessity of "buckling" the product between the die and take-off belt produce the opposite effect, but air may be occluded during mastication to form pockets which partially collapse on cooling, resulting in an apparent contraction in the volume of the gum.

The operations of splicing, fitting the valve, and molding the airbag are susceptible to errors which, having their counterpart in tube manufacture, can, in the same way, be destructive of much valuable material. The importance of perfect gas tightness is enhanced when the tire vulcanizing equipment does not provide for the continual connection of the airbag with the source of pressure (whether air or water) while the tire cure is in progress. That the splice must be made and the valve seating assembled with the utmost care is, of course, necessary in either case; but where the connection exists, the development of a leakage is immediately revealed by the pressure gage, so that the cure may be stopped in time to prevent spoiling the product. It is doubtful, however, whether many plants still exist without this equipment.

To increase the number of cures which can be obtained with an airbag is the constant object of all tire manufacturers, and it says much for the improvements which modern methods have effected that these agents of vulcanization now frequently endure for 150 cures. Largely, this condition is due to the development of the following technique for delaying deterioration.

After molding, the entire surface of the bag is burnt in an oxy-coal-gas (or similar) flame, to produce an oxidized crust which will resist further oxidation; and this procedure is repeated after definite intervals, usually, after 50 cures, unless the condition does not seem to warrant it.

A solution containing, in most cases, such constituents as thermatomic black, glycerine, and biotite mica is then painted on to the bag. When air is the inflation medium, internal oxidation is allayed by introducing carbon-dioxide. Further measures for arresting internal deterioration involve the injection of glycerine into the airbag before each cure; and in the case of water cures this is compounded with a liquid soap (as linseed oil soap), glycerine, and possibly sodium hyposulphite.

Many manufacturers find it advisable to invert the airbag after each cure in order that each side of the bag may receive similar treatment. That this operation is carried out unfailingly may be insured by having the upper half marked in some distinctive fashion upon its consignment to the mold.

The subject of airbag deterioration, however, has been well treated, not only in trade publications, but by chemi-

(*Continued on page* 34)

Soles and Heels from Scrap Rubber

A METHOD of making molded soles and heels from ground scrap pneumatic tires, inner tubes, and solid tires has been perfected in Spain as an industrial development utilizing special machinery of Spanish invention. The machines[1], 4 in number, are here pictured and described as utilized in the process.

The scrap articles are first cut to convenient size by means of the machine illustrated in Figure 2. This is simply a belt-driven circular disk cutting knife mounted on a pedestal. The machine in action is steadied by a balance wheel mounted on the cutting disk shaft. To aid the work provision is made for a drip feed of water from a tank located above the cutter. A hinged arm serves as an adjustable slide for applying the stock to the revolving knife for cutting. By this power cutter stock can be cut at the rate of 50 kilos per hour into suitable sizes for further reduction in the second machine of the process, which is a cutter of different type known as a preparatory mill. It is pictured in Figure 3, with feed hopper raised to show the cutting mechanism of the mill.

Fig. 1. Various Types of Rubber Soles Made in Spain

Fig. 2. Rubber Cutting Machine

The purpose of this machine is to reduce the product from the disk cutter to size adaptable for trituration. From the hopper the stock contacts with the revolving cylinder of the machine, which is studded with numerous edge-cutting plugs positioned so that they pass through a slotted, fixed cutting plate. Thus the plugs and the plate cooperate to produce on the stock a rotary shearing action that reduces the scrap to fragments at the rate of 100 to 200 kilos, and requiring 5 h.p. for operation.

The scrap leaves the machine suitable for trituration in the third machine of the series, pictured in Figure 4. This is also a power driven hopper feed machine operating similarly to the machine in Figure 3. Regarding simplicity of handling and efficiency of grinding effect as well as the regularity and perfection of the work performed by it, this machine is rated as unique and unrivaled. It is fitted with resistant ball bearings and requires 10 to 12 h.p. for its operation. Its production per hour is 40 kilos of black rubber or 80 kilos of red rubber. The machine is water cooled to prevent overheating the stock, which is delivered continuously in extremely fine particles that permit it to unite perfectly into a tough, homogeneous molded article under heat and pressure.

For this final step the specially designed electrically heated press pictured in Figure 5 is used. It is a substantially built press fully equipped either for factory production or laboratory work. It has 3 decks 35 by 45 cm. (about 14 by 17¾ inches) and is an accurately built piece of mechanism with all working parts easily accessible.

Jack-knife switches are located on top of the press for applying current to the heating elements of each plate; the temperature is shown by a dial indicating instrument mounted on top of the press. The molds are handled in and out of the press by an adjustable table that can be raised and lowered to the different deck levels by

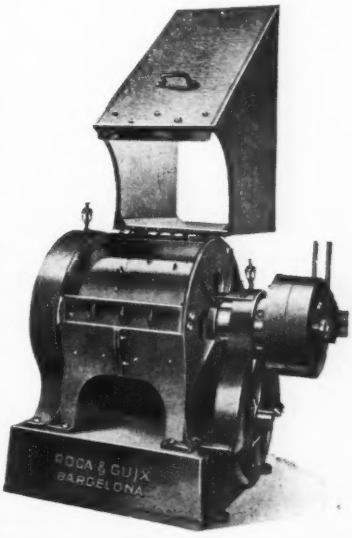


Fig. 3. Mill for Preparation of the Rubber Scrap

[1] Data and illustrations from Roca & Guix, Barcelona, Spain

means of a hand wheel conveniently located for the pressman.

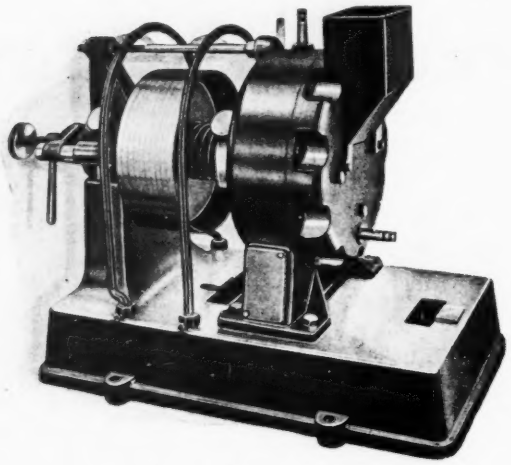


Fig. 4. Pulverizing Mill

A hand hydraulic pump is bracketed to one side of the press base; while on the opposite side the pressure is released by a hand lever to permit the press to open. The pressure gage is located adjacent to the pump within easy view of the operator. The current consumption of the vulcanizer is 22 kilowatts per 8-hour day.

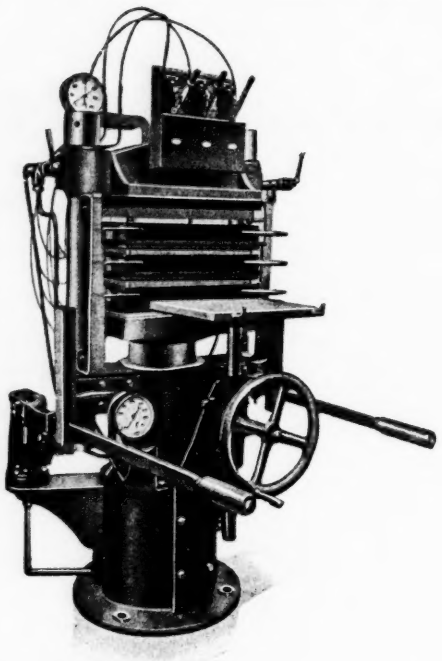


Fig. 5. Electrically Heated Vulcanizing Press

Modern Heat Insulation

(*Continued from page* 26)

and synthetic, is most frequently employed. The synthetic cork is made from mineral wool saturated with asphalt and molded into sheets or panels. Hair felt is often used in different ways, as roll material or built up in layers. Hot and cold water pipes are insulated with hair felt, wool felt, and sometimes cork. One should examine the fire restrictions pertaining to insulating materials since the use of the latter materials is often prohibited if the lines carry any heat; asbestos air cell may be substituted in this case. Another type of insulation, to be used to prevent "pipe sweat," does away with the annoyances caused by the condensation and subsequent dripping of atmospheric moisture on cold water pipes. The installation consists in wrapping the pipe with asbestos paper saturated with asphalt, building up to thickness with felt, and finishing off with canvas.

In applying insulation to any kind of cold pipe, one should remember that the only way to insure the line's being dry is to empty the system before starting the work. In the range from 100°F. to 300°F. a wide variety of materials may be used: asbestos paper or flexible board, or a felt made from asbestos; and magnesia. From 300° to 550°F. magnesia either in the covering, block, or the cement form may well be used. Magnesia begins to calcine about the latter temperature, and when the working range is above this point and not much over 1,200°F., there should be a protective layer used as the first course and magnesia as the second; kieselguhr or diatomaceous earth is popularly used. Industrial work from 1,000°F. up is taken care of by processed bauxite, an aluminum bearing ore; diatomaceous earth and other refractories.

(To be concluded)

Sources of Waste

(*Continued from page* 32)

cal suppliers to whom much valuable information on the subject is due.

Errors arising during the molding of the airbag have their counterpart in all press-curing operations and need little further digression at this point; the types of mistakes and miscalculations treated under "Tire Curing" (Part III)[2] are in part common to this operation.

To conclude this brief account of airbag manufacture requires the remark that it is very important for the tire manufacturer to reduce airbag cost per casing to the extreme limit and *keep it there.* It may happen that this item, reckoned only in terms of a few cents per casing, may yet have an unexpectedly large influence upon the manufacturer's business, particularly where contracts for automobile manufacturers' equipment are in the balance, or the production of a "popular" line of tires is concerned. The continual close watching of the number of cures derived from each bag is, therefore, an essential part of the waste control program. Graph records will show most readily when the yield of cures is falling to an uneconomic figure, and when this tendency is revealed, it should at once be made the reason for a determined drive on all aspects of production involved. Chemist, engineer, and production expert each have a vital part to play in this business, and their resources may often be sorely taxed to overcome many of their problems. The results, however, may be of so immediate and significant a value that to say their utmost efforts are worth while is to fail to present a sufficient picture of the tire manufacturer's concern for reducing so fruitful a source of lost profit.

[2] India Rubber World, Sept. 1, 1933, p. 36.

Helpful Hints for Efficient Inspection

THE cost of the final inspection of manufactured rubber goods is usually excessive and out of proportion with the previous operations. It reminds one of what often happens in a golf game when the golfer who makes a nice shot off the tee and follows it with a long iron to the green, then takes 3 putts, thereby losing the advantage gained by his 2 good strokes. While careful inspection of finished products is necessary, care should be taken to see that time and money are not wasted and that the work is done as expeditiously as possible. The following suggestions may be of some help to production men engaged in this work.

It is important to break in and instruct inspectors properly. All operatives should be trained in the proper method of inspection according to a standard code, each receiving exactly the same information from the same source. This policy assures consistent methods and the shipment of a uniform product. Unless this plan is adopted there are liable to be as many different ideas of what will pass as there are inspectors.

A flexible type of incentive payment method should be used. It should not be too stringent, but one which allows ample time for proper work with a fair remuneration, slightly higher, if anything, than many of the other operations. It is possible to control the quality of inspection and at the same time assure a reasonably high production by restricting output to a certain amount per hour. While such a method is not usually good practice on most operations, it nevertheless can be used many times to advantage in the case of inspectors.

All inspectors should be required to identify their work by placing in the container a slip upon which is written their name or number. This is a great help oftentimes in tracing the offender when complaints are received from a customer.

The efficiency of women inspectors who depend upon male labor to keep stock coming to and from them can be greatly increased if the tenders are tied into the scheme with an incentive of some sort. It makes little difference what the type of incentive is as long as it increases their interest in the amount of work turned out and influences them to keep the inspectors supplied with work at all times.

Salesmen should be encouraged to keep in close touch with the inspectors so that they may know just what is being shipped to their customers. They are in a better position than anyone else is to know just what will be satisfactory and what will not. Many times they can make extremely helpful suggestions to the operators, knowing, as they do, the customer's viewpoint. In many instances they have averted serious losses to the company either by allowing material to pass which otherwise would have been discarded or by stopping shipment of goods which they knew would without question be returned.

A good method of reporting trouble from the inspecting department to the manufacturing rooms should be established. Inspectors should be required to report at once any unusual faults in products so that the information may be relayed immediately to the department from which the faulty material comes. It is of little avail to discover poor work if steps are not taken to get at the root of the evil at once. The inspection of such material may overcome the possibility of its going to the customer; but unless the trouble is corrected, the loss to the company goes on indefinitely.

Figure 1 illustrates an inspection table upon which rolls of matting, sheeting, soling, etc., can be easily and quickly handled. It is built of angle iron with a ¼-inch thick zinc top. The rolls of stock are reeled from one stanchion to the other. As it passes over the table, the stock is washed, inspected, trimmed, and measured, a table length at a time. When the rolls are cut into narrow widths on the table, guides are provided which keep the strips in line and enable the operator to reel them evenly. The zinc top used on this table is more satisfactory than a wooden one, which becomes splintery from constant cutting upon it.

Figure 2 pictures a compact and sturdy type of table for the inspection of heels, soles, and many types of mechanical rubber products. The box of material to be inspected is tipped over at the operator's left hand, enabling her to pull the pieces to the position where she inspects them with a minimum of effort. The container into which the product is packed is close beside her at the right hand on an open shelf. Much space is saved by the use of this type of table as no boxes or cartons project into the aisle. Such a table is comparatively inexpensive to build and is extremely useful in speeding up this work. Attention should also be given to the fact that through the use of this type of table it is possible to combine inspecting and packing into one operation. Plants using a system where the packing is done by another operator, after the product has been inspected, nearly double their costs on these 2 jobs. It is a good place to apply the admonition: Reduce the handlings to reduce the costs.

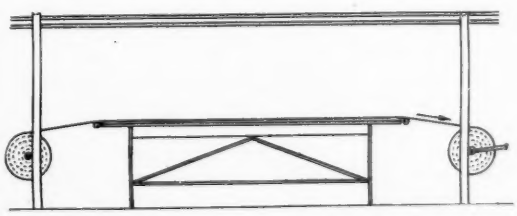


Fig. 1. Table for Inspecting, Measuring, and Cutting Rolls of Matting, Etc.

Figure 3 shows an inspection table designed particularly for use in the handling of small rubber pieces such as nipples, grommets, washers, etc. As such products usually come in large quantities, the cost of inspection is liable to be high unless means are provided which

speed up their handling. On this type of table the stock is dumped into the chute as it lies flat on the table. When it is lifted up at the rear, as illustrated, the stock flows out through the narrow end on to the table directly in front of the inspector. Both hands are constantly employed to sort out the good pieces from the bad and to push them into the slots through which they drop into the containers underneath. Not only will such a device greatly speed up this work, but it also makes the inspector's duties less laborious; for the constant picking up of small, rough pieces is particularly fatiguing as well as injurious to the hands.

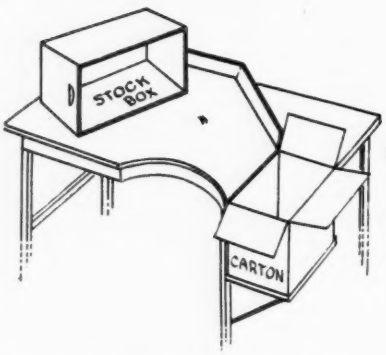


Fig. 2. Inspection Table for Rubber Heels

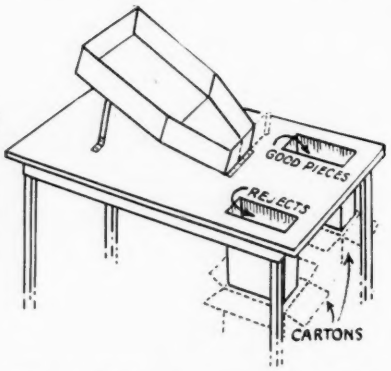


Fig. 3. Table for Inspecting and Sorting Small Rubber Products

Devices such as these are inexpensive, but improve production and quality.

Profits in Inventory Appreciation

THE vastly improved level of prices of raw rubber currently quoted compared with those a year ago invests manufacturers' inventories with a much more favorable aspect. Then, with rubber bought at high prices, manufacturers watched quotations recede to a low of 2⅜¢ and bump discouragingly along at about the 3¢ level. At the end of August rubber was selling at prices from 7 to 8¢ a pound; cotton was selling at between 9 and 10¢ a pound, compared with a low last year of 5¢.

Rubber manufacturers, of course, like all other manufacturers, have been trying to cut their inventories, but the volume of raw material they still have on hand is large enough to produce excellent profits if the rise in cotton and rubber is maintained or enhanced.

On December 31, 1932, the 4 largest tire companies reported gross inventories worth $100,269,923, compared with $126,919,147 the year before. To ascertain how much of this consisted of raw stocks may be determined to some extent from a report on tire inventories released by the Department of Commerce on April 1, 1933.

The summary, as given in India Rubber World on July 1, was:

Industry Inventory of Automobile Casings
(Thousands of Casings)

	April 1, 1932	October 1, 1932	April 1, 1933
Independent dealers	4,634	4,991	4,536
Mass distributers	1,900	2,450	1,815
Manufacturers	7,902	4,873	5,811
	14,436	12,314	12,162

Since the first of the year tire prices have been increased 30% owing to the increase in the cost of raw materials. The last increase came at the end of July. Another increase of 10% is expected due to increase in the price of raw materials and manufacturing costs.

The cotton manufacturers are absorbing a processing tax of 4.2¢, and the NRA code they have adopted means increased overhead costs which will be passed on to consumers. The rubber industry is likewise operating under the code which will increase their costs as tire men are demonstrating by the proposed fourth raise in tire prices since spring.

Another aspect is the expected action by the British and Dutch governments in restricting the output of rubber. At the time of writing opinion seems to be strong that a plan soon will be forthcoming despite delays.

A glance at rubber statistics for July indicates another support for the belief that manufacturers will make excellent inventory profits this year. Stocks on July 31 were 326,609 tons, only 2.2% under those a year ago. Consumption was 50,184 long tons for July, 51,326 for June, with estimates putting August takings at 40,000. This 3 months' total is 40% of the outstanding domestic stocks. But domestic stocks have been reduced little, indicating that manufacturers are holding on to stocks for higher prices. Even the rubber bought now at 7¢ may show a profit if restriction goes through before the end of the year.

The ramifications go further. The steel industry's code called for a 15% wage increase, probably presaging a rise in steel prices. Passed on to automobile manufacturers with their higher tire prices and labor costs, a rise may be expected from them. Production is running at record rates because consumers seem to be anxious to buy at present low prices before an upturn. There is also a large backlog of tire replacement orders which the successive advances in price should bring out.

In short, if there is no setback, rubber manufacturers should recoup some of their losses made in previous years by profits in the appreciation of present inventories, a greater demand for and a rise in the price of their finished products.

Screw Micrometer Gages

THREE forms of screw micrometer gages have been described.[1] They are single-contact, double-contact, and horizontal types, in which the screws are adapted to measure rubber parts by the use of electrical contacts together with an indicating device that determines when the gage-foot touches the rubber specimen. In these gages the compression during gaging is eliminated.

In practice it is found that very soft rubber sheets up to ⅜-inch thick can be measured with the single-contact gage with an accuracy of 0.0002-inch in the ¼-inch range.

These gages measure samples covering a wide range of sizes and shapes, including the thickness of sheets up to one inch, the width of test specimens, and the diameters of rods and spheres up to 2 inches.

[1] Research Paper No. 549, *Bur. Standards J. Research*, May, 1933, No. 5, pp. 575-82.

Blue Eagles and Business

THERE is an old adage not to count your chickens until the eggs are hatched; however that applies to chickens. Don't expect blue eagles to lay your eggs.

A Blue Eagle Insignia in itself is not going to do the whole trick. It merely signifies that the great majority of us are behind a movement to see fair wages to employes and to see fair profits on manufacturing costs.

BUT—the selling job still has to be done. The eagle is a tough bird, and so is the task ahead. People buy before prices rise; yet it is going to take real selling to keep people buying when prices have gone up. This holds true for the manufacturer as well as the retailer.

EDWARD LYMAN BILL,
Publisher

EDITORIALS

INDIA RUBBER WORLD Anniversary

THIS is the INDIA RUBBER WORLD'S forty-fourth birthday. It made its first appearance on October 15, 1889, as INDIA RUBBER WORLD AND ELECTRICAL TRADES REVIEW.

Administrator Johnson Speaks

"WE KNOW that we cannot quickly or completely do all that a distressed people would like to have us do. We only know that we are following the plan prescribed for us by the President. We know that it has raised wages and put people to work and increased purchasing power and helped to turn factory wheels and increased the market for farm and factory products. We know that it has abolished child labor and flooded schools and restricted sweat shops and given women a better break. We know that it offers a way to stabilize industry and restore profits and improve such sick industries as the bituminous coal and textile industries. We know that it has afforded people a greater sense of security and given to thousands and thousands of N.R.A. women and consumers a feeling that they need not sit dumbly by, but that they have an active part in the plan the President has drawn to combat this depression. We know that somehow the President's great plan—of which N.R.A. is but a part—has put new heart of hope into a whole people; and if we did not know it otherwise, this greatest of demonstrations in the metropolis of the whole world would tell us so in language louder than words and with a poignancy that would thrill the heart of a brass image.

"All this is—for the whole American people—to lift up their heads and hearts, to live, and work, and fight again; and if Franklin Roosevelt and his understanding, human, vibrant, American plan of recovery never did anything more than this, it would have been enough to make his administration a landmark in our history, and, as we believe, to defeat this depression.

"A people inspired by faith can do anything—and he has restored faith."

Japan's Supremacy

THE earliest Japanese rubber manufacturing enterprise was the Mitatsuchi Rubber Co. established in 1880 for the making and repair of diving suits. However European methods and machinery were introduced by the Meiji Rubber Works of Tokio that was organized in 1892 as the Tokyo Rubber Co. In 1894 Japan imported rubber goods, value $94,593, and 36,166 pounds of crude rubber, value $36,166.

From this small beginning Japan has developed from a very small factor in the rubber manufacturing industry to the rank of fourth among the world's rubber consuming countries. Japan's rubber industry now comprises 670 factories which produce practically every kind of rubber article and consume 56,125 tons of crude rubber annually.

The principal exports in 1932 were: 1,000,000 dozen pairs of rubber boots and shoes, value 4,800,000 yen; 3,000,000 dozen pairs of rubber-soled canvas shoes, value 15,000,000 yen; balls and toys, value 5,507,000 yen; and tires, chiefly for cycles, 4,400,000 yen.

Japan's remarkable expansion in the production of rubber goods is due to the advantage afforded by a depreciated currency, proximity to the sources of crude rubber and cotton fabric, and a very low wage scale. Japan is today the world's largest producer of rubber footwear and is advancing steadily in the production of other rubber products.

Why Rubber Manufacturers Advertise in IRW

RUBBER manufacturers of high standing lend their moral and financial support to the leading trade journal of the rubber industry.

Rubber manufacturers obtain world-wide publicity for their company names and products.

Rubber manufacturers' brands and trade marks are given the required publicity that also serves to warn possible infringers.

INDIA RUBBER WORLD is usually consulted when information concerning rubber goods and the names of manufacturers are required.

Rubber manufacturers of mechanicals such as hose, belting, and packing sell mechanical rubber goods to other rubber manufacturers by INDIA RUBBER WORLD advertising.

Rubber manufacturers realize that INDIA RUBBER WORLD is an outstanding instance where the utilization of an appropriation for purposes other than those strictly of an advertising nature is justified.

A COUNCILMAN AT CONSHOHOCKEN, PA., HAS PROposed an ordinance requiring the railroad companies to place rubber tires on all locomotives and cars that run through the town. INDIA RUBBER WORLD, October 15, 1893.

What the Rubber Chemists Are Doing

Combined Accelerator Action

A REPORT on the combined action of certain organic accelerators was published October, 1932, by the Ministry of Communications, Japan.[1] Although the report is in Japanese, the research is outlined and its conclusions given in the following synopsis:

Synopsis

Keeping pace with the recent development in rubber industry in general, various organic accelerators of good quality have been invented one after another; nearly 100 different kinds of them now are put on the market. Although most of these accelerators, even when used singly, produce sufficient effects for the purpose of regulating the time of vulcanization and improving the quality of vulcanizates, the combination use of 2 accelerators has come to be the subject of the rubber chemists interested in this field, in order to obtain more efficient results on vulcanization. Thiollet and Martin[2] and W. Norris[3] have already made public the results of their experiments on the combined effect of organic accelerators, reporting the fact that in vulcanization they behave in different manners from any single accelerators separately used. But in the above investigations, rather impure chemicals on the market were incorporated in rubber stocks only in arbitrary proportions, quite regardless of proportions based on their chemical constitutions.

Under the presumption that any 2 accelerators, if they are mixed *in a certain definite ratio,* may produce some remarkable effects, the present authors have studied the combined action of several accelerators on the market on the basis of the eutectic curves which they show when melted together. After finding the positions of the molecular compound and eutectic mixtures on a eutectic curve obtained by measuring the melting point of 2 accelerators mixed, the authors first determined mixing ratios corresponding to the same molecular compound and eutectic mixtures.

The observation of the behavior in rubber vulcanization of the combined accelerators with the mixing ratios thus determined is the theme of the present authors' experiments, which cover the following 4 combinations:

(A) Mercaptobenzothiazole and diphenylguanidine.

(B) Mercaptobenzothiazole and methylene aniline.

(C) Tetramethyl thiuram monosulphide and diphenylguanidine.

(D) Tetramethyl thiuram disulphide and diphenylguanidine.

The eutectic curves were obtained by graphically plotting the points measured after H. Rheinboldt's method[4]: viz., after 2 purified, finely powdered materials were mixed in various proportions and filled in a capillary tube in an ordinary melting point measuring apparatus, they were observed to be determined 2 points in each case of various proportions, i.e., the one point just beginning to melt, and the other melting up.

The experiments as to the scorching tendency follow. The test pieces consisting of standard smoked sheet 100 parts, zinc oxide 100 parts, sulphur 3 or 5 parts, and 1 part of a single accelerator or combined one are heated for 150 minutes at maximum at 70°C. and 100°C., each of them being taken out one by one at an interval of 10 minutes, and the scorching tendency is estimated from the contrary turbidity curves drawn by a modified method of Vogt[5] [for the combinations (A) and (B)], and a method newly devised by the present authors [for the combinations (C) and (D)]. In the latter method, instead of the observation with naked eyes, the turbidity of benzine solutions is indicated by the deflection of a galvanometer connected with a cuprous oxide photoelectric cell.

The tests of vulcanization were carried out under 45 and 20 pounds per square inch [for the combinations (A) and (B)] and 10 pounds per square inch [for the combinations of (C) and (D)] steam pressures, with stocks consisting of standard smoked sheet 100 parts, zinc oxide 5 or 10 parts, sulphur 3 or 5 parts, accelerator 0.5 or 1 part.

From these experiments the following has conclusively been confirmed by the present authors:

1. In the combination (A) there form one molecular compound and 2 eutectic compounds, each of which, especially the former, promotes both scorching and vulcanization strikingly.

2. In the combination (B) only one eutectic compound is formed, but no molecular compound. Scorching tendency, though comparatively slight for all tests, gradually increases in accordance with the increase of the quantity of mercaptobenzothiazole against that of diphenylguanidine. The accelerating effect on vulcanization is fairly improved by using the combined accelerator and reaches maximum at the eutectic point.

3. In the combination (C), as in the case of (B), only one eutectic compound is formed. The scorching tendency and activity for vulcanization remarkably increase by the combination, but do not reach maximum at the eutectic point. The maximum point is attained in the neighborhood of tetramethyl thiuram monosulphide 30% and diphenylguanidine 70%.

4. In the combination (D) the eutectic curve is not to be distinctly drawn, hence the impossibility to determine the points of molecular compound and eutectic mixtures. In spite of this, scorching tendency and vulcanization activity are greatly increased, as in the case of (C), by the combination, reaching maximum near the point of tetramethyl thiuram disulphide 30% and diphenylguanidine 70%.

5. The reason why the maximum activity is reached in the neighborhood of thiuram 30% and diphenylguanidine 70% in the combination of both (C) and (D) seems to be explained by the assumption that tetramethyl thiuram monosulphide or disulphide is reduced, by hydrogen sulphide evolved in the course of vulcanization, to dimethyl dithiocarbamic acid which combines with diphenylguanidine to form a molecular compound that is remarkably active to scorching tendency and vulcanization.

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[1] "Researches of the Electrotechnical Laboratory." Takatu-Kiyosi, Director. No. 341. "Studies on the Combined Action of Organic Accelerators for Rubber Vulcanization." By Minatoya-Syukusaburô, Kozima-Kitarô, and Nagai-Idumi.

[2] *Caoutchouc & gutta-percha,* 26, 14494 (1929).

[3] INDIA RUBBER WORLD, 82, 2, 53-55 (1930).

[4] *Z. prak. Chem.,* 1925, 2, 111, 242; 1926, 112, 187; 1926, 113, 199.

[5] INDIA RUBBER WORLD, 65, 347 (1922).

Flectol-B

FLECTOL-B is a new antioxidant. It offers effective protection against oxidation of rubber measured either by natural aging results, or by accelerated tests in oxygen bomb, air bomb, or hot-air oven (Geer test). In fact, stocks containing Flectol-B show in such tests only two-thirds the deterioration of stocks containing the naphthylamine compounds. Flectol-B is not a naphthylamine compound. It is inert in rubber mix, and, physically, it is a slightly viscous liquid.

Slate Flour

FINELY powdered slate waste has been suggested as a substitute compounding ingredient for whiting, barytes, clay, talc, etc., in the manufacture of a general line of mechanical rubber goods and hard and soft rubber molded articles. Slate flour for rubber mixings has been carefully investigated and reported upon by an English authority[1]. The scope of this investigation comprised experimental examinations of the physical and chemical properties of 3 samples of slate from North Wales. One was gray slate powder intended as a filler for asphaltic and bituminous road surfacing compositions. It showed 1.77% grit on 90-mesh. The other samples were air-floated gray and green slate flour showing, respectively, on 300-mesh 0.001 and 0.004% of grit.

Two series of mixings were made on a 95 : 5 rubber-sulphur stock. The first was to show the effect of adding various proportions of air-floated slate flour, and the second for accelerated aging tests, using 70% by weight (13% by volume) on the basic rubber-sulphur stock.

The author's summary and conclusion on this investigation are quoted as follows:

The effects of slate flour or powder, when added to a 95 : 5 rubber-sulphur mixing, are: shortens the time of cure required to give optimum mechanical properties, reduces elongation at constant load, increases hardness and permanent set, and slightly lowers the scleroscope resilience. Ordinary slate powder reduces tensile strength, and in the proportion of 13 volume % has no effect on total resilient energy. Up to 13 volume % air-floated slate flour slightly increases tensile strength, and up to 27 volume % increases resilient energy. During aging at 70° C. slate accelerates stiffening, and the green air-floated flour accelerates oxidation and perishing; while the ordinary powder appears to retard the fall in tensile strength.

As a compounding ingredient, ordinary slate powder roughly resembles natural whiting, both materials having similar effects on hardness and permanent set; while air-floated slate flour has a slightly greater stiffening effect and rather more favorable effects on tensile strength, resilient energy, and scleroscope resilience than whiting. Judged by tensile strength and resilient energy, the ordinary slate powder is inferior to whiting.

These results agree on the whole with the statements made in the literature except in regard to the apparent favorable influence of ordinary slate powder on aging, which, however, requires confirmation. Provided the aging properties are satisfactory, air-floated slate flour appears to be suitable as an inert or slightly reenforcing compounding ingredient. The ordinary slate powder, being relatively coarse and gritty, is probably suitable only as a filler for a very cheap type of mixing. On account of its color it would probably be impossible to use slate in any quantity in white mixings.

[1] "Slate Flour in Rubber Mixings." J. R. Scott, *Research Asso. British Rubber Manufacturers J.*, Vol. 1, No. 12, Dec., 1932, pp. 115-26.

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A. C. S. Rubber Division

THE first session of the fall meeting of the Rubber Division, American Chemical Society, was held in the Stevens Hotel, Chicago, Ill., September 11, with a symposium on the progress of chemistry in the rubber industry. Papers were presented by Harry L. Fisher and Roscoe H. Gerke; Ira Williams; Norman A. Shepard, John N. Street, and Charles R. Park; and Richard A. Crawford.

Two sessions were held September 12 followed by the Rubber Division banquet at the Hotel Sherman that night. The program was completed on September 14 with the election of the following officers for the coming year. Chairman, Ira Williams; vice chairman, S. M. Cadwell; secretary-treasurer, H. E. Simmons; executive committee, L. B. Sebrell, F. W. Stavely, J. T. Black, H. J. Conroy, Carl Frick; sergeant-at-arms, C. W. Christensen.

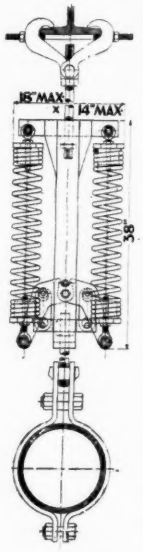
New York Group

THE fall meeting of the New York Group, Rubber Division, A.C.S., will take place October 6 at the clubrooms of the Building Trades Employers Association, 2 Park Ave., New York, N. Y. The exhibit, showing important developments in rubber products, promises to be very interesting and instructive as a large number of representative samples has been secured by the Program Committee. Also 4 short papers will be read on the following subjects: "Plioform," "Proofing," "Automotive Rubber Goods," and "Latex Developments." At this meeting a nominating committee will be named to select officers for the coming year. Dinner tickets at $2 each may be secured from the group secretary-treasurer, Peter P. Pinto, 257 W. 57th St., New York.

New Machines and Appliances

Constant-Support Hanger

ONE of the problems always present in high-temperature piping containing risers is that of furnishing adequate support to pipes and fittings under conditions of vertical expansion. When piping is inadequately supported, vertical movements set up severe non-axial stresses in the joints which often result in leakage or outright failure. Counterweight suspension is far too heavy, bulky, and expensive to give complete satisfaction. Direct spring suspension has not been able to prevent the occurrence of these stresses. Since the supporting effort of a spring varies constantly with its deflection, a pipe line directly sprung cannot receive constant support in every position.



Genspring Pipe Hanger

The pipe hanger illustrated carries the pipe on springs, not directly, but through levers which continually compensate for the changes in the supporting effort of the springs and in every position balance the support with the weight of the piping. As a result, the pipe is absolutely free to rise and fall under changes of temperature without any resistance whatever to its movements, and forces that tend to twist and weaken joints cannot occur. The standard model hanger weighs about 160 pounds and can accommodate any load from 500 to 7,000 pounds with a range of vertical movement up to 2 inches. Its dimensions are 38 inches high by 18 inches by 14 inches. Hangers requiring headroom of only 6 inches or to accommodate loads and movements other than those of the standard hanger can be supplied on special order. The principle has also been adapted to underneath supports for heavy units such as heat-exchangers, condensers, primary valves, and similar equipment operating at elevated temperatures and pressures. General Spring Corp., 11 W. 42nd St., New York, N. Y.

Hydraulic Rubber Cutter

THE accompanying illustration represents a 20-ton hydraulic rubber cutter designed to slice bales of crude rubber. The machine consists of a steel frame mounting, a cast-iron cylinder with cast-iron piston. The piston-rod is of steel to which is attached a cast-iron knife holder movable between vertical guides. The cutting knife is ⅜-inch thick and of special steel. A rolling table admits convenient feeding in of the bale of rubber. On the opposite or outlet side is a rigid steel plate table with brass plate linings. There are steel plate walls on both sides, cutting knife guides and stroke limiters, and a protecting bar on the intake side. The total length of the table is 5 feet 3 inches and the total height of the machine 11 feet 11 inches.

Operating pressure is about 50 to 100 pounds per square inch; cutting pressure 27,000 to 45,000 pounds; water discharge for 1 full stroke about 80 to 100 gallons; number of strokes under full stroke of 25½ inches in 1 minute is about 1½ to 2. Theodore Bell & Co., Ltd., Kriens-Lucerne, Switzerland.

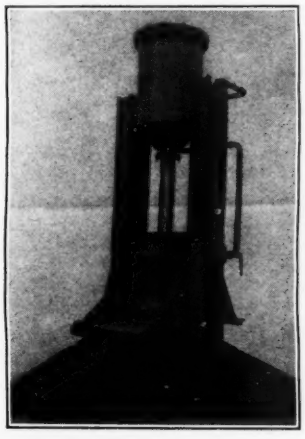
Hose Wrapping Machines

WINDING hose with spiral cross-wrappers before vulcanization and removing them afterward by the old-type machines required considerable skill on the part of the operators to produce smooth goods and conserve the wrapping fabric. Distinct improvement in both these respects is attained by the companion machines.

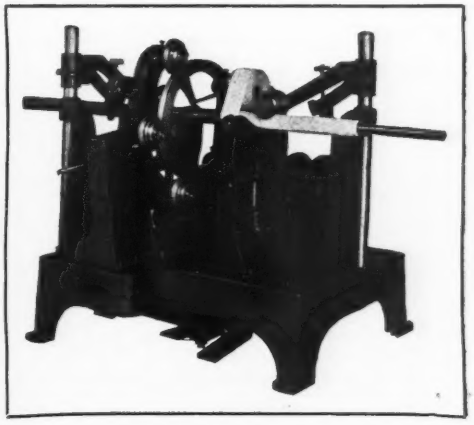
Model 9 machine, here shown, is designed to apply around the hose an even spiral wrapping of tape at a uniform tension as the poled hose travels through the machine. It will wrap with any width of material up to and including 3 inches with pitch and overlap according to requirements. The machine takes a roll of tape 7 inches in diameter with a 1¼-inch bushing and is driven by a single h.p. motor.

Model 10 is the unwrapping machine. Briefly it operates as follows. As the tape is removed from the hose it passes through a wetting tank, thence through a series of pins for ironing and straightening the tape before spooling tightly on a core.

The drive of this machine is through a friction disk and flexible coupling so arranged that the machine may be stopped at will. Terkelsen Machine Co., 326 A St., Boston, Mass.



20-Ton Bale Cutter



Terkelsen Hose Wrapping Machine, Model 9

Compensated Belt

THE usual practice of making all duck and rubber belting flat has been departed from in the construction of the compensated belt. Thus the common fault of rupturing the outside ply in service is overcome. This design is practical because only a portion of the maximum ply stress on a belt comes between the pulleys. The maximum ply stress on every belt is at the small pulley. Hence by reducing ply stresses while flexing, the useful life of the belt is prolonged. This new construction is the only low tension rubber belt and incidentally the only one on which belt dressings may be used without damage to the belt. The construction presents many and unusual further advantages of practical engineering interest. The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J.

Synchronous Motor with Dynamic Braking Control

AN ACTUAL full-size rubber mill synchronous motor with push button control, arranged for dynamic braking and quick emergency stopping to meet safety requirements in rubber mills, is shown at the World's Fair.

The motor is typical of the kind

used for driving rubber mill lines through a gear reduction. The motor rating is 300 h.p., 514 r.p.m., 0.8 leading power factor, supplied with 208-volt, 3-phase, 60-cycle power from a transformer bank in the Electrical Building. The motor is designed for full voltage starting, with sufficient torque to start the mill rolls even when fully loaded with rubber.

When the "start" button is pressed, the motor accelerates with full line voltage impressed across its terminals. After a definite time interval, the D.C. field excitation is applied automatically, and the motor pulls into step and operates at synchronous speed.

When the "stop" button is pressed, a double-throw contactor quickly disconnects the motor from the A.C. line and connects a dynamic braking resistor across its terminals. The motor then acts as a generator and comes to a very quick stop, yet without undue stress or shock to the equipment. The motor travels only 4 revolutions in decelerating from full speed to standstill, the time required being about one second. After the dynamic braking operation, the D.C. field excitation is automatically removed by a definite time relay, and the motor is ready for another start.

To safeguard the motor against overheating due to frequent starting and stopping, a "Thermoguard" is attached to the motor windings. The "Thermoguard" is a small disk type thermostat which trips the motor off the line when the temperature approaches the danger zone. Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

Radiator Hose Machines

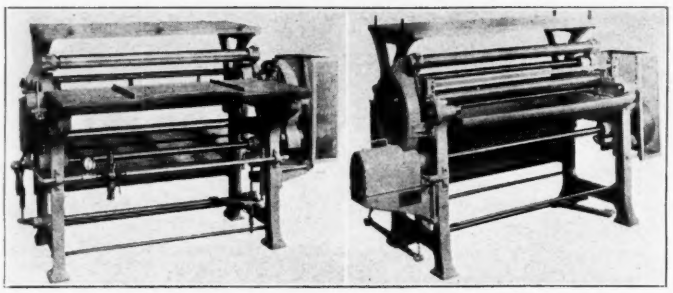
RADIATOR or other short hose can be made and wrapped by specially designed machines which together comprise a working unit.

The making machine is designed to produce hose from 1⅛ to 2½ inches inside diameter and from 36 to 40 inches in length, but can also be arranged for other lengths if desired. Its capacity in the hands of an experienced operator should be 750 to 1,000 pieces of hose a day. The method of operation follows.

After the material has been started around the mandrel by hand, the mandrel is placed on the lower rollers. The hand lever shown at the left of the table is then pulled, and the top roller is brought down by air until it rests on the covered mandrel with just the right pressure. Pressing the foot pedal then sets the rolls in motion, and the hose is evenly rolled on the mandrel. The pedal is then released, which disconnects the clutch, stops the rollers, and at the same time releases the air and allows the top roller to rise. The hose-covered mandrel can then be removed and passed on to the wrapping machine.

The wrapping machine serves also to unwrap the cured hose and simultaneously applies the same wrapper to a piece of uncured hose. Its capacity matches that of the making machine, and it is designed to handle hose from 1⅛ to 2½ inches inside diameter and 36 to 40 inches in length, but can also be arranged for other sizes.

In the process of unwrapping, the cured hose on its mandrel is placed in the centers shown at the front of the machine, the center bearing at the right being moved out by the small lever and held in running position by a spring. A brake at the left puts suitable tension on the wrapper as it goes to the unwrapped hose, and a spreader bar is provided to remove wrinkles. After placing the cured hose on centers, the wrapper is passed over the spreader bar and attached to the unwrapped hose on the rollers. The pedal is then pressed, bringing the top roller down and setting the lower rollers in motion until the wrapper has been wound from the cured on to the uncured hose. The pedal is then released; the rollers stop revolving; and the top roller rises. Farrel-Birmingham Co., Inc., Ansonia, Conn.



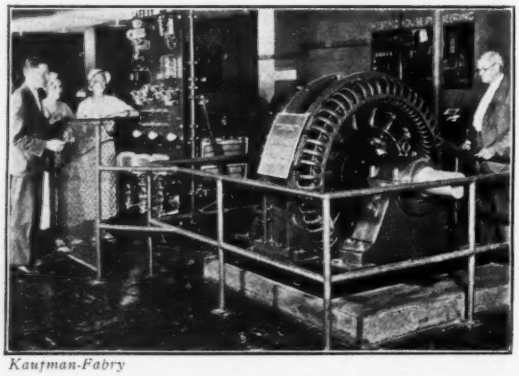
Making Machine — Wrapping Machine

Radiator Hose Machines

4-Duty Coupling

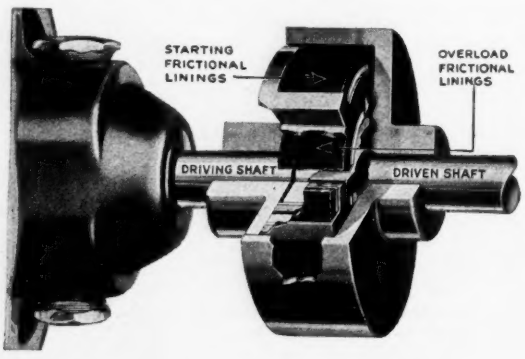
FOLLOWING in the wake of the high speed motor has come a new development in a coupling which operates automatically by centrifugal force and does 4 important jobs in a single device. Thus it starts, couples, cushions, and limits the load. It saves in electrical equipment—motors and controls—protects the machine or the product being made by smooth gradual starting and cushioning of overloads, and in other ways adds to the economy and efficiency of the drive.

The primary function of this coupling is as an automatic starter, centrifugally operated. It accomplishes this function in extremely simple fashion. Essentially, the construction involves merely 2 drum-shaped members, one attached to the driving shaft and the other to the driven shaft. Between driving and driven members are inserted 2 sets of floating segments, made usually of brake lining reenforced with lead. The amount of lead is calculated to give the required centrifugal pressure for carrying the load. The outer segments are actuated by the driving member and the inner by the driven member. The 2 form just the right combination for smooth starting and overload protection. The Falk Corp., Milwaukee, Wis.



Kaufman-Fabry

Westinghouse Synchronous Motor Shown at the Century of Progress Exposition



Falk-Rawson 4-Duty Coupling

New Goods and Specialties

IN THE REALM OF SPORTS

"Bambino" Ball Game

Indoor Baseball Game

RUBBER is an extremely versatile product, especially for use in all sorts of games. The latest recreation device to utilize the material's advantages is the "Bambino" Ball Game, here illustrated. Any number of people can play the game, indoors and even outside, under the same rules as a big league game. The necessary instructions and equipment are all provided in this unique plaything with its wide appeal.

The game consists of a lithographed metal base on which appear the diamond, scoring indicators and legends, a novel rubber umpire which "calls the shots" of the players, and a hole through which is inserted a spring-base rod on which is attached a sponge rubber ball. The metal base of the game boasts 4 rubber tips underneath to prevent marring surfaces on which the game may be set. A good-size bat and 18 wooden "players," 9 red and 9 blue, complete the equipment. Bambino Products Co., Chicago, Ill.

Griptex Rubber Ferrules

THOSE golfers experiencing the annoyance and expense of broken and dangling string windings on their clubs will welcome these replacement rubber ferrules known as Griptex. They are claimed to have unusual strength and elasticity and can be applied very quickly by means of a special applicator that comes with each package. These ferrules give the up-to-date advantages found with the new clubs on which string windings have been eliminated. As they are so light in weight, these rubber devices are said in no way to impair the balance of the clubs. Griptex will do away with mental hazards from dangling wrappings and expense for club rewinding. Griptex Co., 542 N. Erie St., Toledo, O.

Latex in "Protex" Balls

PLAYGROUND balls, whether for indoor or outdoor use, of necessity must be extremely durable, very well made. To this end Rawlings Mfg. Co., St. Louis, Mo., has improved its "Protex" ball construction by the use of latex. The center of the ball has its binding yarns impregnated with latex. Thus they can't break down, and the ball stays round. The cover of the ball also is treated with latex, to make for uniform thickness, pliability, and appearance. "Protex" covers are said not to stretch or loosen; they adhere to the ball and prevent core breakdown.

Football Parka

THE gridiron season is with us again, and it brings urgent demands for protective equipment for players. As a means of protecting men withdrawn from a game in any quarter, to prevent their taking cold, by conserving the body heat pending their return to the fray, and to shield the player from rain, the improved Rawlings parka is offered. It is made of special fabric, blanket lined with waterproofing rubber sheeting between, a perfect wind break. This garment has extra-large shoulders, pull-over hood, slip straps at the wrist, snap fasteners at the neck opening, and lined pockets. Rawlings Mfg. Co., St. Louis, Mo.

To Protect Players

Fig. 1. Valve Construction

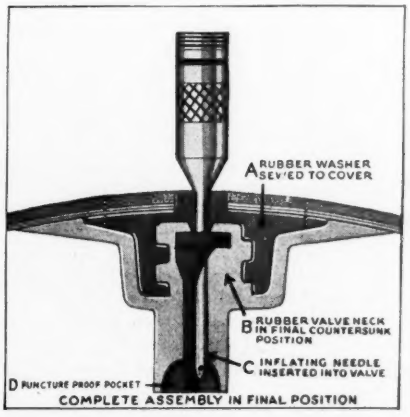

A RUBBER WASHER SEW'ED TO COVER
B RUBBER VALVE NECK IN FINAL COUNTERSUNK POSITION
C INFLATING NEEDLE INSERTED INTO VALVE
D PUNCTURE PROOF POCKET
COMPLETE ASSEMBLY IN FINAL POSITION

Fig. 2. Valve Operation

Improved Ball Valve

THE construction of an improved rubber valve for the detachable bladders used in basketballs is shown in Figure 1. The article consists of a molded rubber washer sewed to the ball cover, into which is screwed a molded valve neck containing the air retaining element. To apply the device the countersunk threaded neck of the full molded and shaped bladder is temporarily snapped out and screwed into the washer, after which operation the bladder resumes its normal position. The complete bladder is then flush with the casing, and all working parts are within.

The inflating needle is inserted through the washer aperture, as illustrated in Figure 2, pushing aside the rubber plug or core until its point reaches the safety pocket in which the air is released. When the needle is withdrawn, the rubber plug resumes its normal shape and position, and no air escapes. The complete absence of metal parts gives true flight and bouncing quality to the ball, and due to the perfect action of the rubber valve core constant pressure is maintained. The Draper-Maynard Co., Plymouth, N. H.

Rubber Industry in America

OHIO

Four Best Years Since 1929

How many manufacturers today can say with William E. Crofut, president and general manager, Forest City Rubber Co., Cleveland, O., that in the last 4 years their businesses have shown such a rapid expansion that their products now enjoy world-wide distribution?

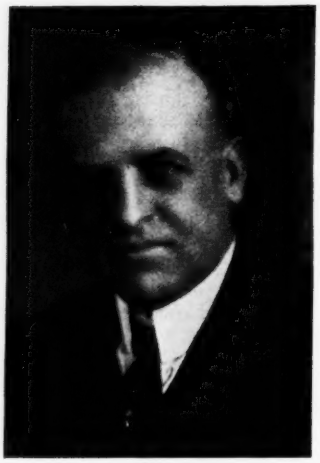
Facing the problem posed by the start of the depression in 1929, Mr. Crofut took immediate and drastic action. While continuing his old lines, he actively engaged in the manufacture of specialties for the domestic and foreign trade. He introduced these new products, of the highest quality only, into Canada and the United States. Instant acceptance resulted.

Another bold move followed. Mr. Crofut personally went to England, France, Germany, Holland, Switzerland, Italy, and Belgium. He established foreign representatives who met with the same success he had found. In April and May of this year he visited the principal cities of Cuba, Mexico, and Puerto Rico, where business connections were established. His goods are now going to every country in the world, and the Cleveland bankers consider the Forest City Rubber Co. one of the most outstanding successes in the last 4 years.

The remarkable aspect of this man's accomplishment is that he is no slave to business. "Absence from business should be frequent," is one of his major contentions. Besides his world business travels he has vacationed in Hawaii and has explored Quebec and Ontario. Recently he and his 12-year-old daughter made a canoe trip with Indian guides into Labrador.

Mr. Crofut was born in Syracuse, N. Y., on September 5, 1874. He attended Syracuse University, but did not graduate. He helped publish the first newspaper of the *Syracuse Post Standard* and in 5 years rose to city editor on that paper. Before incorporating the Forest City Rubber Co., he was treasurer for the Ohio Rubber Co., of Cleveland.

He plays golf, rides horseback, follows the hounds in season, and is a member of the Cleveland Chamber of Commerce, the Union Club, and the Mayfield and the Aintree country clubs.



W. E. Crofut

University of Akron, Akron, has made the following announcements. Walter A. Cook has been appointed head of the Department of Chemistry to succeed H. E. Simmons, now president of the university. Mr. Cook is a graduate of the University of Cincinnati and has been connected with the U. of Akron chemistry department for the past 7 years. Howard I. Cramer, research chemist, Goodyear Tire & Rubber Co., a graduate of the Akron university and a doctorate at the University of Wisconsin, will have charge of the classes in rubber chemistry and the major inorganic chemistry students. A. B. Evans, of the University of Michigan, was appointed holder of the fellowship in Rubber Chemistry offered by the Firestone Tire & Rubber Co. for the academic year 1933-34.

H. Muehlstein & Co., Inc., dealer in scrap and crude rubber, recently moved to larger quarters at 739 First Central Trust Bldg., Akron. Henry M. Rose, until recently in charge of the Los Angeles, Calif., branch, is now managing the Akron offices with the assistance of Alfred Stein. S. A. Tanney has been transferred from Akron to Los Angeles and placed in charge of the branch there at 728 Hill St.

Paul W. Litchfield, president of The Goodyear Tire & Rubber Co., Akron, closed the 1933 Homecoming of members of the sales and branch organizations with an address in Goodyear Theater on the morning of September 21. In the afternoon there was a barbecue, entertainment, and field events at Wingfoot Lake.

It has been an eventful week for the 1,000 sales and branch employes who were brought here on the occasion of Goodyear's thirty-fifth birthday.

The Oak Rubber Co., balloon manufacturer, Ravenna, has signed, and put into effect the provisions of, the Toy and Playthings Industry Code of the National Recovery Administration. The plant, consequently, operates on a 5-day week, being closed on Saturday; so no business will be transacted or shipments made on that day.

Akron machine shops, specializing on molds, job work, and special machinery, since the machine industry is split into a number of groups which will operate under different NRA codes, held several meetings to form a code and an association. To this end they elected the following committee: chairman, C. R. Quine, The Akron Equipment Co.; C. A. Safreed, National Rubber Machinery Co.; Harry Alexander, Summit Mold & Machine Co.; Howard Tham, Mechanical Mold & Machine Co.; and George Herdman, Falls Engineering Co. The committee drafted a tentative code for the Akron industry that could apply also to mold makers in other districts. Washington, however, decreed the group too small; so advised it to join some already existing national group and work under its code. Mr. Quine now reports that soon the Akron group will unite with the Special Tool, Die & Machine Shop Institute, 7016 Euclid Ave., Cleveland, which has just filed its code in Washington.

Rubber Code

The code of the entire rubber industry, with the exception of the tire division, has been adopted by the rubber manufacturers and on September 25 was sent to the NRA administrator for final hearing and approval.

Tear-Proof Inner Tube

A new tear-proof inner tube for low-pressure balloon tires now appears on the market. Two different stocks are used for this tube; its inside periphery is made to reduce abrasive action caused by rims, and the outside to resist tears even in case of flat tires.

Another feature is the valve assembly, which may be inserted through the hole in the rim and the tire mounted without removing any part of the valve. The rim nut is eliminated, and in case of a flat the valve pulls into the rim well and prevents the unit from being torn from the tube. It will turn with the tire until the car stops. The B. F. Goodrich Co., Akron, O.

—MIDWEST—

Firestone Notes

As Miss Alice Ochsenslager entered the Firestone Factory and Exhibition Building at "A Century of Progress," Chicago, Ill., to see tires made, she was pronounced the three-millionth visitor to the building. She was presented with a set of 5 tires, just out of the molds, by Harvey S. Firestone, Jr., who was attending the Fair during Farmers' Week.

Honored as the five-millionth visitor to the Firestone exhibit Miss Phyllis Evans received a bouquet and a set of new Firestone High Speed Tires. Harvey S. Firestone, Sr., pioneer rubber manufacturer and chairman of the board, Firestone Tire & Rubber Co., Akron, and his daughter made the presentation.

At the Indianapolis State Fair, Barney Oldfield, recently set a new world's tractor record of 39.045 miles per hour, driving an Allis-Chalmers standard farm tractor with high speed gears and Firestone pneumatic tractor tires. The tractor which set this record is capable of plowing and doing all the other farm operations at increased speed and with new comfort and fuel economy. This is made possible by the new Firestone tire development, the tires requiring only 12 pounds' air pressure to operate successfully at the plow or on the highway.

The Firestone fabric mills in New Bedford and Fall River, both in Mass., were closed the week of September 5 for vacations, inventory, and repairs, etc. The plants reopened September 11 in full, affecting about 2,400 workers, 1,250 in New Bedford and 1,150 in Fall River.

Motor & Equipment Manufacturers Assn., 250 W. 57th St., New York, N. Y., will hold its annual convention at the Blackstone Hotel, Chicago, Ill., October 31. This meeting will come during the week of the Automotive Service Industries Show scheduled for the Merchandise Mart, Chicago, October 30 to November 3, under the joint auspices of the MEMA, the Motor & Equipment Wholesalers Assn., and the National Standard Parts Assn. G. L. Brunner, MEMA president, has announced the appointment of V. J. Snively as the association's representative on the Joint Trade Show Operating Committee, replacing N. H. Boynton, resigned.

American Cyanamid & Chemical Corp., 535 Fifth Ave., New York, N. Y., has appointed H. L. Derby, Jr., manager of its Chicago, Ill., office at 20 No. Wacker Drive. The district embraces the territory west of Ohio, extending to the Rocky Mountains.

A TURNOVER STICK STRUCK A CLINCHER builder on the right side causing an internal injury and estimated disability of 56 days. *Rubber Section, N. S. C.*

NEW JERSEY

D. R. Stevens

Practically all New Jersey rubber manufacturers report very satisfactory business. The demand continues for all kinds of mechanical goods and tires. The hard rubber situation shows little improvement. Many concerns were compelled to hire extra help after signing the NRA code and reducing their working hours. Included among these are the Murray Rubber Co., the Puritan Rubber Co., the Thermoid Co., and the Woven Steel Hose & Rubber Co., all of Trenton.

The Pocono Co., Trenton, recently suffered loss by fire when flames damaged a heater in the cloth drying room. The plant has been operating 24 hours a day, but the fire did not cause any layoffs. The damaged heater was replaced at once.

The Thermoid Co., Trenton, and its subsidiary, the Woven Steel Hose & Rubber Co., both operate with 3, 8-hour shifts. Thermoid is busy filling orders for the automotive industry.

Puritan Rubber Co., Trenton, now operates on an 8-hour shift.

Pierce-Roberts Rubber Co., Trenton, continues its double shift. Manufacturing new rubber novelties resulted in taking on additional help.

Essex Rubber Co., Trenton, announces that the plant continues busy, with promising prospects for a good fall season.

Bruce Bedford, president, Luzerne Rubber Co., Trenton, and Mrs. Bedford have been cruising Chesapeake Bay.

The Murray Rubber Co., Trenton, reports continued good business. The company has paid the City of Trenton $31,161.41 in back taxes at the suggestion of Judge Philip Forman, of the United States District Court. Murray's total delinquency was $87,667.61, but the judge limited the payment in order not to strip the company of funds and force it into difficulties that might affect operation of the plant. Of the total delinquency, $32,000 represent tax arrears prior to the Murray receivership.

An Old Grad of M. I. T.

Donald Read Stevens, vice president and works manager of The Okonite Co., Passaic, N. J., and associated companies, is one of the reasons that the Massachusetts Institute of Technology is so proud of the well-trained graduates it contributes to business.

Graduating from the Institute in 1911 with a B.S. degree, Mr. Stevens got a job with the Peerless Motor Car Co., Cleveland, O. He began as draftsman, but did not stop there. Before he left 4 years later to go with the Goodyear Tire & Rubber Co., Akron, O., he was successively, assistant to the chief engineer, secretary of the operating board, and assistant factory manager of Peerless.

Goodyear employed him in 1921 as assistant to the factory manager. His term with Goodyear lasted 6 years and saw him manager of the labor and aeronautical departments.

He came East in 1921 to The Okonite Co., Passaic, N. J., and has been with them since. The Okonite Co. is associated with the Okonite-Callender Cable Co., Inc., Paterson, N. J., and the Hazard Insulated Wire Works, Wilkes-Barre, Pa. Mr. Stevens started as superintendent of The Okonite Co., became works manager, and is now vice president and works manager of all 3 companies.

He was born in Richland, Mich., on May 3, 1889. He now lives in Ridgewood, N. J.

Dural Rubber Co., Flemington, was well occupied during the summer with swimming tubes for the trade. Now, however, the firm is concentrating on its other products.

William J. B. Stokes, prominent Trenton rubber manufacturer, recently celebrated his seventy-sixth birthday. In honor of the event he gave a family dinner at his home in Princeton.

General C. Edward Murray, president, Crescent Insulated Wire & Cable Co., Trenton, has been appointed chairman of the campaign to save Trenton from bankruptcy. He is now making a drive to collect $3,000,000 in back taxes for the city.

Joseph Stokes Rubber Co., Trenton, reports that both its Trenton and Canadian plants are very busy, operating with night shifts. The company has added some new novelties to its production schedule.

A Correction

In the article, "Rubber Flexing Machine," published in the September issue of this journal reference was made to dumb-bell shaped rubber samples prepared as directed in Bureau of Standards Technical Paper No. 5. This should have read "Bigelow-Sanford Test Procedure No. 5."

NEW ENGLAND

Lewis-Shepard Co., Watertown Station, Boston, Mass., manufacturer of material handling equipment, through President A. L. Lewis has announced the appointment of George H. Corliss as sales promotion and advertising manager. Mr. Corliss, who has had considerable experience in marketing, has just returned East after spending the last 3 years in the Midwest.

The Zapon Co., Stamford, Conn., a subsidiary of Atlas Powder Co., also manufacturer of pyroxylin base finishing materials, leather cloth, suede finish, auto top and similar materials, has announced that its western business, as of September 1, has been combined with that of the Brevolite Lacquer Co., North Chicago, Ill., in a new corporation known as The Zapon-Brevolite Lacquer Co. The eastern business, as well as the entire leather cloth and kindred fabrics department, will be conducted as heretofore by and under the name of The Zapon Co. in Stamford.

Lowell Covered Rubber Thread Co., Inc., 217 Jackson St., Lowell, Mass., manufactures rubber thread covered with rayon, celanese, silk, and cotton of various colors and sizes. Albion Lefebvre is president, treasurer, and purchasing agent; and Z. Normandin, vice president.

Plymouth Rubber Co., Inc., Canton, Mass., NRA member, has adopted a 5-day, 40-hour week; therefore office and factory will be closed on Saturdays.

The Fisk Rubber Corp., 154 Grove St., Chicopee Falls, Mass., through President Edward D. Levy reports that increasing orders for Fisk Tires, due to immediate and appreciable public response to newspaper advertising, necessitated steady increase in production schedules. Employment figures for the spring and the summer follow: April 1, 692 employes throughout the country; April 12, 740; April 30, 1,034; May 6, 1,552; June 3, 2,381; July 1, 2,648; August 5, 3,255; and August 19, 3,428. Now, however, owing to the normal seasonal let-down in tire production, the company has decided to maintain a maximum of 2,200 workers. To avoid laying off any more employes Fisk will operate under a reduced time schedule. The company manufactures automobile tires, tubes, and tire sundries at its Chicopee Falls plant and tire fabrics at its New Bedford, Mass., plant. Fisk maintains branches throughout the United States. Company officers, besides Mr. Levy, are W. B. Stratton, vice president; Whitfield Reid, secretary; Rolland C. Guy, treasurer; and Chas. J. Allen, purchasing agent.

Para Thread Co., Inc., Woonsocket, R. I., manufactures rubber thread. Executives include Harold T. Merriman, president and treasurer; George R. Keltie, secretary; and Harry A. Schlosser, purchasing agent.

EASTERN AND SOUTHERN

United States Department of Commerce, Washington, D. C., has announced the merging of the activities of the Hide and Leather, the Rubber, and the Boot and Shoe and Leather Manufactures divisions of the Bureau of Foreign and Domestic Commerce into one unit known as the Leather-Rubber-Shoe Division. Wilbur J. Page, former chief of the Hide and Leather Division, heads the new unit. Everett G. Holt, former head of the Rubber Division, has been named assistant chief. The same general type of services heretofore made available by the 3 separate divisions will be provided for the respective industries through the newly created unit.

E. B. Buck, president of the L. A. Dreyfus Co., Rosebank, Staten Island, N. Y., importer and developer of gutta jelutong products, synthetic chicle, etc., was recently elected chairman of the board and has been succeeded as president of the company by Henry Schultz.

Rolle Rubber Co., Inc., with principal office at 296 Broadway, New York, N. Y., and branch at 508 S. Dearborn St., Chicago, Ill., handles rubber bands, sponge rubber, rubber tubing and sheeting, mats and matting. Officers include Edw. F. Rolle, president; Geo. J. Knies, vice president and treasurer; and John A. Petrullo, secretary.

Baird Rubber & Trading Co., Inc., dealer in crude rubber and liquid latex, moved from 80 Broad St. to 233 Broadway, New York, N. Y.

Geyer Co., New York, N. Y., and Dayton, O., and **Paul Cornell Co., Inc.**, New York, N. Y., advertising agencies, recently merged. B. B. Geyer, president of the Geyer Co., becomes chairman of the board of the eastern unit of the organization, known as the Geyer-Cornell Co., Inc., 500 Fifth Ave., New York. He will also remain president of the Dayton unit, Third National Bldg., which will continue under its former name. Mr. Cornell, president of the company bearing his name, becomes president of Geyer-Cornell. Among the accounts handled by the organization is Dayton Rubber Mfg. Co., maker of tires and belts.

Frank E. Randall, manufacturer of Randall and Stickney micrometer dial gages, indicators, and watchmakers' tools, 248 Ash St., Waltham, Mass., reported a very slight increase in orders for rubber gages, some of which went to France.

American Curatex Corp., 26 Spruce St., North Quincy, Mass., lists as its products compounded latex products and rug-backing materials. Ruglock is the company trade name for its latex non-slip compound for retail distribution. David A. Cutler is president, and David R. Cutler, treasurer and purchasing agent.

Castle Rubber Co., East Butler, Pa., makes all kinds of molded goods without fabric, all kinds of wrapped cylindrical goods, gaskets, packer and swab rubbers, wringer rolls, and all sizes of rubber covered rolls. Trade names include Ca-Sel-Co and "Midget." Russell J. Turner is company president, and N. E. Brown is secretary-treasurer and purchasing agent.

R. L. Chipman, the well-known crude rubber broker, is now associated with Fred. Pusinelli & Co., Inc., 347 Madison Ave., New York, N. Y.

Latex Exporters, Inc., 261 Fifth Ave., New York, N. Y., manufacturer and exclusive foreign distributer of all liquid latex water cured prophylactics, distributes the products of The Killian Mfg. Co., Akron, O.

Deauville Specialty Corp., 10 W. 33rd St., New York, N. Y., offers a complete line of bathing accessories consisting of caps, belts, bags, footwear, inflated rubber novelties for water sports (not toys), and nautical novelties for bathers. A. M. Bressler is president and treasurer; F. F. Bressler, vice president; and F. Schocket, secretary.

American Rubber Executives

Samuel Steinfield, pres., treas. *b.* Chelsea, Mass., Oct. 28, 1889; grade and high schs.; dry goods clerk, 1908-10; sales and delivery, tea and coffee route, 1910-11; waste material business, 1911-15; pres. and treas., Claremont Waste Mfg. Co., Claremont, N. H., 1915 to date. *Member:* Claremont Chamber of Commerce, Elks, Odd Fellows, Masons, Country Club. *Address:* Claremont, N. H.

Harvey Lind Titus, sales office mgr. *b.* May 30, 1908, Cambridge, Mass.; Cambridge High and Latin Sch.; A. B., Harvard U., 1929; mgr., Strolling Players, 1928 season; asst., Daniel Starch and Staff, statisticians, statistical dept.; Warren Telechron Co.; sales office mgr., Godfrey L. Cabot, Inc., 1930 to date. *Member:* Harvard Club, Boston. *Address:* 146 Upland Rd., Cambridge.

Roy M. Walker, dist. mgr. *b.* Sabetha, Kan.; Kansas U., engr., 1915; Bristol Co. dist. mgr., Boston, 1918-19; St. Louis, 1920; Pittsburgh, 1921-31; Chicago, 1931 to date. *Member:* Capt., Reserve Military Aviator. *Address:* 3039 Hartzell St., Evanston, Ill.

Ernest C. Martin, gen. sales mgr. *b.* Nov. 8, 1887, Toronto, Can.; Acad. Schs.; studied international marketing; gen. sales mgr., Interlake Tissue Mills, Toronto; v. p. in charge of sales, Saranac Pulp & Paper Co., Plattsburg, N. Y., 1928; gen. sales mgr., Dunlop T. & R. Co., Ltd., Toronto, 1929. *Member:* past pres. International Assn. Gyro Clubs, v. p. Canadian Export Club of Toronto, Ontario Club, Mason. *Address:* 870 Queens St., Toronto, Can.

OBITUARY

Former Superintendent

PAUL WITTECK, former superintendent of the American Hard Rubber Co. plant, Butler, N. J., died at his home on September 12, from pneumonia.

He was born in Trier, Germany, on July 21, 1861, was educated in the art schools of Munich, and became efficient in the trade of his father and grandfather, Artificers in Metals. After his military service in Germany he came to New York in 1883 and affiliated with Whiting-Silversmiths. In 1885 he was engaged by the Butler Hard Rubber Co. as a designer and die maker, but soon took charge of the Mechanical Division of the factory in general. In 1898 at the consolidation of the American Hard Rubber Co., Mr. Witteck became superintendent of the Butler factory and held this position until he retired about a year ago.

The deceased became a member of the first Borough Council in 1901 and served 2 terms as mayor of the community. In 1905 he became a charter member of the First National Bank of Butler and served on the directorate ever since. He was also a member of Silentia Lodge of the Masonic Order.

Mr. Witteck is survived by his widow, one son, and 2 daughters.

Planting Authority

THE rubber industry lost a valued and popular figure on August 17 when a sudden heart attack caused the death of the well-known rubber merchant and planter, Fred T. P. Waterhouse, president of Fred Waterhouse & Co., Ltd., with main office in Singapore, S. S., and branch in New York, N. Y. He, with his cousin Albert, operating as The Waterhouse Co., Ltd., Honolulu, was the first American to plant *Hevea* in Malaya. The successful results of their efforts were the Tanjong Olok Plantation and the Pahang Rubber Co., of which Fred Waterhouse was treasurer.

His work compelled him to travel widely and frequently. In an attempt to prove rubber could be grown near the United States—he was one of the earliest advocates of this scheme—he made an extensive study in Mexico of the great possibilities there. He also wrote many interesting monographs on the subject.

Mr. Waterhouse was born in Honolulu, November 23, 1869. In 1905-1906 he was a member of the House of Representatives in the Hawaiian territorial legislature. In 1907 he was sent by the Board of Agriculture of the islands to investigate the rubber planting industry in Malaya, Dutch East Indies, and Ceylon.

Golf, tennis, and yachting claimed those moments he did not devote to rubber. His clubs included the University, Honolulu; Phi Gamma Delta Fraternity, New York; Singapore, Selangor, and other local organizations.

Marques Studio

Fred T. P. Waterhouse

Funeral services were held in Medan, Sumatra. Burial was in the family plot in Honolulu. Surviving are Mrs. Waterhouse, a daughter, and a son, F. L. Waterhouse, of Singapore, who has been active head of the business for several years and will continue it under the same name.

Tire Foreman

THOMAS E. POPE, 48, tire foreman at the Hamilton Rubber Mfg. Co., Trenton, N. J., died recently at his home in Trenton after an illness of several weeks. He once worked also in a rubber plant at Conshohocken, Pa. He was a Mason and a Knight of Pythias. Mr. Pope is survived by his widow, 2 sons, and 2 daughters. Burial was at Conshohocken.

Goodyear Salesman

ALBERT W. HOLCOMB, JR., salesman at the Detroit, Mich., branch of The Goodyear Tire & Rubber Co., died of heart disease on September 22, at Royal Oak, Mich. Mr. Holcomb was 39 years old and had been in the employ of Goodyear for 20 years. He was a graduate of Central High School, Akron, O.

Burial was in Rose Hill Cemetery at Detroit.

He leaves his widow, 2 children, and his parents.

British Manufacturer

FROM England comes the sad news of the sudden death in Eastbourne on September 7 of Frederick Lionel Rapson, 43, a former chauffeur whose invention of a low-pressure tire won him considerable attention. The companies he organized to develop his product included Rapson Tire & Jack Co., Ltd., which also manufactured tires in Tasmania; F. Lionel Rapson, Ltd., manufacturer of Rapson tires; and Rapson Tire & Rubber Co. (Australia), Ltd. His business, however, was liquidated in 1932.

Veteran Rubber Man

A LONG illness caused the death on August 31 of Harry Eugene Dennie, president of the Security Rubber & Belting Co., Chicago, Ill., which he founded in 1920. He was born in Traverse City, Mich., in 1875 and attended the public schools of Grand Rapids.

Mr. Dennie devoted about 35 years of his life to mechanical rubber and kindred lines. He was salesman for the Quaker City Rubber Co., Philadelphia, Pa., and for 8 years served as general manager of the Imperial Belting Co., Chicago, before organizing his own company.

He belonged to the Golden Rule Lodge, A. F. & A. M. (Chicago) and Oriental Consistory of Chicago and Medinah Temple, A.A.O.N.M.S.

Unique Rubber Product

THE feasibility of introducing a latex made reducing garment having a slight degree of porosity has been realized in the material known as "Multipore." This most recent achievement in porous latex is the invention of Harold D. Rice and Chester Linscott, both of the United States Rubber Co. Sheets of "Multipore" rubber contain 2,000 pores to the square inch, each less in diameter than a human hair; this figure compares with 417 pores to the square inch in human skin and represents the greater possibility of "Multipore" to "breathe" as it were. It is thus ideal for reducing and sportswear garments, being stretchable in all directions as well as porous.

Report Tire Stocks Promptly

The United States Department of Commerce, Washington, D. C., again will make a survey of dealers' stocks of tires as of October 1. As these surveys are most valuable to the tire industry, every recipient of the questionnaire is urged to report his stocks immediately upon receipt of the form.

A PRESS HELPER WAS PUSHING A MOLD carriage loaded with molds. One of the molds slipped down between the mold carriage, catching his left middle finger between the mold and the carriage rail, injuring his finger to the extent that it was necessary to amputate the finger at the middle joint. As the result of the amputation this accident was charged with 300 days lost. *Rubber Section, N. S. C.*

EDITOR'S BOOK TABLE

Book Reviews

"Rubber in Chemical Engineering." By Henry P. Stevens, M.A., Ph.D., F.I.C., and M. B. Donald, M.Sc., A.R.C.Sc., M.I. Chem. E., F.I.C. Published by The Rubber Growers' Assn., Inc., 2, 3, 4 Idol Lane, Eastcheap, London, E.C.3, England. Paper, 55 pages, illustrations, and index.

This brochure contains chapters devoted to the properties and chemical resistance of rubber paints, cements, etc., and the chemical uses of rubber. Describing as it does the present position of rubber as applied to the chemical and allied industries, this book should be of help to engineers in general and chemical engineers in particular, in gaining a better knowledge of the application of rubber.

"Labor Productivity in the Automobile Tire Industry." By Boris Stern. Bulletin No. 585 of the United States Bureau of Labor Statistics. United States Government Printing Office, Washington, D. C. 1933. Paper, 74 pages, 5¾ by 9 inches.

This pamphlet analyzes the productivity of labor in the tire industry and includes a concise account of the technical processes involved in tire and inner tube manufacture. The data are the result of an intensive survey conducted in the leading tire plants of the country operating modern methods and machinery. Following are the topics embraced: labor productivity, technological displacement of labor, rates of wages, etc., and tire and inner tube manufacturing operations discussed in sequence in 4 chapters.

"1933 A.S.T.M. Manual on Presentation of Data with Table of Squares and Square Roots." Sponsored by Committee E-1 on Methods of Testing. Published by the American Society for Testing Materials, Philadelphia, Pa. Paper, 45 pages, 6 by 9 inches. Price 50¢.

This manual was prepared by a special committee of engineers, who are statistical experts, to make available in convenient form some of the principles of efficient presentation of data. The manual discusses the application of statistical methods to the problems of (1) condensing information contained in a set of observations and (2) presenting the essential information in a concise form more readily interpretable than the unorganized mass of original data. Attention is directed particularly to quantitative information on measurable characteristics of materials and manufactured products.

Besides pointing out important measures or values especially useful for summarizing information contained in a set of observations, the committee has given methods of computation, etc.

In a particular instance the functions of the data which should be presented depend upon what uses are to be made of them; accordingly a section is devoted to essential information.

The manual also gives critical comments on various methods used in presenting data, a discussion of what relevant information should accompany the data, and the committee's recommendations for data presentation.

"Bulletin of the National Research Council." August, 1933, No. 91. Industrial Research Laboratories of the United States Including Consulting Research Laboratories. Fifth Edition Compiled by Clarence J. West and Callie Hull for the Research Information Service. National Research Council, United States. Published by The National Research Council of The National Academy of Sciences, Washington, D. C., 1933. Paper, 223 pages, 6¾ by 9¾ inches. Indexed by geographical distribution and subject classification. Price $2.

The industrial research laboratories of the United States to the number of 1,575 are listed in this edition with information regarding their personnel and lines of work. Laboratories connected with federal, state, or municipal governments or with educational institutions have been excluded from this survey.

New Publications

"Softened Rubber." Typke & King, Ltd., Crown Chemical Works, Mitcham Common, Surrey, England. This booklet comprises a brief technical article recounting the economic and technical advantages of softened rubber manufactured after the method of Ungar and Schidrowitz (British Patent No. 368,902) by Typke & King.

"The Story of Rubber." Van Cleef Bros., Woodlawn Ave., 77th to 78th Sts., Chicago, Ill. This illustrated 8-page booklet briefly recounts the history of rubber, its production and application in the company's extensive line of products for many industries.

"Foreign Commerce and Navigation of the United States for the Calendar Year 1932." United States Department of Commerce, Bureau of Foreign and Domestic Commerce, U. S. Government Printing Office, Washington, D. C., 1933. Cloth, 590 pages, 9 by 11½ inches. Indexed. This annual statistical record presents an analytical summary of the foreign commerce of the United States in the form of tables covering kinds, quantities, and values of exports and imports; general imports; foreign merchandise in transit or transshipped; tonnage tables and tables of weight. Rubber imports, exports, and imports entered for consumption are given for the calendar year 1932.

FINANCIAL

Lee Rubber & Tire Corp.

Lee Rubber & Tire Corp., Conshohocken, Pa., for the quarter ended July 31, reported a net profit after taxes, depreciation, interest, and other charges, of $221,090, equal to 84¢ a share on 262,200, $5 par capital shares, excluding 37,800 shares in the treasury. For the 9 months ended July 31 the company showed a net profit of $25,931, or 9¢ a share.

Kelly-Springfield

Kelly-Springfield Tire Co., 1775 Broadway, New York, N. Y., for the 6 months ended June 30, reported that an operating loss of $478,764 was incurred before depreciation, losses on foreign exchange, fixed charges, and other deductions, with a net loss of $744,267 as reported after giving effect to these charges. Since April operations have been on a profitable basis, the company announces.

Fisk Rubber Corp.

Fisk Rubber Corp., Chicopee Falls, Mass., and subsidiaries reported for the period May 20 to June 30 a net income after expenses, Federal taxes, provision for capital stock tax and other charges, of $191,279; sales totaled $1,335,788. A separate statement of export accounts in liquidation for the same period showed a net profit of $24,686 transferred to reserve, after expenses and including $4,999 profit on exchange. The tentative consolidated balance sheet as of June 30 last shows current assets of $7,422,513 and current liabilities of $892,234; cash on hand and in banks amounted to $866,089; and estimated cash receivable from reorganization committee was $1,700,000.

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
American Hard Rubber Co.	8% Pfd.	$2.00 q.	Oct. 2	Sept. 15
Collyer Insulated Wire Co.	Com.	$0.25 q.	Oct. 2	Sept. 25
Firestone Tire & Rubber Co.	Com.	$0.10 q.	Oct. 20	Oct. 5
Goodyear Textile Mills	Pfd.	$0.75 q.	Oct. 1	Sept. 20
Goodyear Tire & Rubber Co. of Canada, Ltd.	Com.	$0.60 q.	Oct. 2	Sept. 15
Goodyear Tire & Rubber Co. of Canada, Ltd.	7% Pfd.	$1.75 q.	Oct. 2	Sept. 15

Rubber Industry in Europe

GREAT BRITAIN

New Research Society

The research work started early last year by the Rubber Growers' Association Technical Research Committee extends to many industries which have not previously utilized rubber, and the investigations have made necessary applications for patent rights, the consideration of commercial arrangements, and the assumption of responsibilities in relation to them. To handle all this detail a separate organization has been formed, the Rubber Producers' Research Association, incorporated on August 4, 1933. The first council includes Sir Stanley Bois, N. C. S. Bosanquet, P. J. Burgess, C. H. Figg, W. J. Gallagher, G. H. Masefield, H. Eric Miller, H. J. Welch, and Sir Herbert Wright.

The new association will promote and develop the use of rubber and latex and derivatives, will investigate the merits of inventions, deal with patents, etc. There is to be closest cooperation between it and the Rubber Growers' Association Technical Research Committee and other research organizations at home and abroad. For the present the work will be financed by grants from funds left for such research with the R. G. A. Council or the Technical Research Committee.

Tire Imports

With an adequate protective duty on tires and the establishment in England of numerous up-to-date tire factories by various foreign firms, one would hardly expect an increase in British tire imports. Nevertheless, as *The India Rubber Journal* points out, statistics for the first 7 months of 1933 show a substantial rise in the imports of tires into England as compared with the corresponding period of 1932. In the current year the figures for covers were 52,045, value £57,947, against 21,882 covers, value £34,019. The highest figure so far was in July, 1933, when 14,614 covers, value £15,197, entered the country against only 2,166, value £3,567, in July, 1932.

Dunlop Concentration

As a result of the decision of the Dunlop Rubber Co. to concentrate all manufacturing and selling (except tires and accessories) into 4 large divisions: general rubber goods, footwear, garments, and sports goods, 9 companies of the group are now in voluntary liquidation. These include Liverpool Rubber Co., Ltd.; Broadhurst & Co., Ltd.; Dela Rubber Co., Ltd.; Macinlop, Ltd.; Macinlop (Ireland), Ltd.; Macinlop (South Africa), Ltd.; Dunlop Sports Co., Ltd.; Tyre Machinery Syndicate, Ltd.; Shrewsbury & Challiner Tire Co., Ltd. The new policy, it is said, has already justified itself by greater efficiency and economy.

Pneumatic Tires on Farms

A few years ago sporadic newspaper reports from Europe indicated occasional interest on the Continent in extending the use of pneumatic tires to other than the customary vehicles for which they were primarily intended. Of late a decided tendency in this direction has been noted in England where, it appears, pneumatic tires are replacing steel tires on light horse-drawn commercial trucks. For some time, too, the Dunlop Rubber Co. has been boosting tires for use on the farm. Dunlop has staged demonstrations showing the advantages of equipping farm carts with pneumatic tires, and more recently it has been featuring special pneumatic tires for farm tractors that can be adapted for various agricultural operations as ploughing, cultivating, digging potatoes, etc., and provided with a trailer, likewise pneumatic-tired, also serves for hauling. Besides the firm is showing 2½-inch section tires for wheel-barrows.

British Notes

Starting September 26, 1933, a course of 18 lectures on rubber is being given every Tuesday evening at the City of London College, Moorfields. George Rae, of Harrisons & Crosfield, will deliver 12 lectures on "The Production and Consumption of Rubber," to be followed by 2 lectures on the "Marketing of Rubber," by C. Kraay, of Hymans, Kraay & Co. Finally will come 4 lectures on "The Character, Grades, and Defects of Raw Rubber," by W. H. Stevens. An examination will be held at the end of the course, and the best student will receive a prize of 5 guineas, offered jointly by the Rubber Trade Assn. of London and the R. G. A.

The Ministry of Labor has finally granted permission for the admission into England of 12 "keymen" from Zlin, Czechoslovakia, to instruct British workers in the Bata methods, and the Bata shoe factory at Tilbury has started operations.

The new Vulcan loose-leaf books, for bookkeeping, etc., have a rubber "tread" around the edges of both covers. The rubber, it seems, protects the books from damage that might be caused in safes, etc., and as it projects beyond the surface of the cover, it also protects the binding material from wear. It acts also as an anti-slip device on polished desks.

A new water sports outfit, shown in the *Bulletin of the Rubber Growers' Association*, consists of an inflated rubber ring with seat across the center and a small outboard motor strapped to the wearer's back.

Henry P. Stevens, analytical and consulting chemist, 15 Borough High St., London, S.E.1, recently announced that he has taken into partnership his son, W. H. Stevens, who has been associated with him for the last 6 years.

Holland

The Tenth Annual Report of the Technical Department of the International Association for Rubber and Other Cultivations gives details of investigations carried out for the Committee for the Increase of Rubber Consumption which was formed last year by the Algemeen Landbouw Syndicaat. These investigations covered the use of ground cork and rubber for heat insulation, rubber for fire-lighters, latex to replace casein as an adhesive for plywood, etc.

Rubber fire-lighters can never compete with the usual type of Dutch fire-lighters. Experiments with the cork and rubber insulating material had to be abandoned because of inadequate cooperation from local manufacturers. As to the use of latex for plywood[1], greater resistance to moisture was found, particularly when the latex was vulcanized during the process of adhesion, but the economical aspect of the question was not considered.

It is further learned that paints containing chlorinated rubber are being tested on rubber and palm oil estates in Sumatra, and the Avros Experiment Station is watching progress in the investigations on the use of these paints for protecting coagulating pans, steel constructions, and the outside of railway carriages.

Gas main joints of rubber protected with lead sheeting have been found superior to the old-fashioned joints of hemp and lead; the former are tight and remain so; they have a certain flexibility, and traffic vibration does not affect them.

By way of experiment, rubber rail-pads were used on the Netherlands Railways in 1929, and the results have been so favorable that 50,000 pads are to be used this year in large scale experiments. If these prove successful, their use will be extended.

[1] See INDIA RUBBER WORLD, Jan., 1933, p. 55.

GERMANY

Rubber Statistics

Statistics covering the first half of 1933 show an increase in Germany's imports of crude rubber, but a decline in both imports and exports of manufactured rubber goods. After deducting reexports, the net imports of crude rubber were 266,125 quintals against 219,300 in 1932. Total imports of manufactured goods came to 9,457 quintals, value 2,828,000 marks, against 11,435 quintals, value 4,160,000 marks, and included mostly soft rubber goods. The decline in these imports was heaviest in the most important lines; thus automobile tires were 7,148 instead of 19,052, and tubes, 3,596 against 6,832; tubes for cycles, 12,200 compared with 248,527; footwear, 41,093 against 132,430 pairs; uncovered thread, 547 quintals against 838. Among the few items showing increases were belting, 189 quintals against 165; packing, 89 against 35 quintals; and unspecified soft rubber goods, 3,391 against 1,991 quintals.

Exports of manufactured goods totaled 66,285 quintals, value 23,156,000 marks, against 73,060 quintals, value 29,186,000 marks. Here too decreases were noted in automobile tubes, 42,051 against 48,734; tires, 61,823 against 72,040; cycle tubes, 171,535 against 367,818; footwear, 392,104 against 633,894 pairs; hose, 4,483 against 5,507 quintals; packing, 677 against 857 quintals; and rubber and fabric goods, 6,502 against 6,666 quintals. On the other hand belting rose from 1,002 to 1,127; uncovered thread from 1,177 to 1,421 quintals; and other soft rubber goods from 29,640 to 32,003 quintals.

New Cartel Laws

Some time ago it was pointed out in these columns that the new government in Germany might take action with regard to cartels. This conjecture has now become a fact, and the new cartel laws give the government power to force the creation of cartels in those industries or trades where such a move is deemed necessary to curb over-production. The hemp and rope goods industry is already feeling the effect of this law. For more than a year negotiations to regulate prices had been under way, but definite agreement could not be made owing to the attitude of numerous outsiders. Now, however, the government has stepped in, and outsiders will be compelled to join the cartel, it is learned.

Incidentally, it may be noted that under the new order in Germany, the small man is to have a much more important part in the distribution of goods than has hitherto been the case. Capitalistic retail undertakings, chain stores, etc., will be discouraged, it appears, for it is held that their expansion was due not to increased new demand from the people, but because their capital put them in a position to oust otherwise efficient middle-class firms. These large concerns are also blamed for having, by their high-pressure advertising, led the people on to buying inferior and, therefore, ultimately more expensive goods so that the feeling for quality has gradually been lost.

Other European Notes

The S. A. Pirelli Revere Societa Italo-Americana per il Filo Elastico, Milan, has been formed to manufacture rubber thread in Italy under the patents of the United States Rubber Co., New York, N. Y., U. S. A. This American firm and the Societa Italiana Pirelli of Milan are largely interested in the new concern which, it appears, will not manufacture elastic fabrics, but only covered and uncovered thread.

Damage estimated at over 1,000,000 kroner was caused by a fire at the Askim Gummivarefabrik A.S., Askim, Norway. The works, including the footwear department, were for the most part destroyed, and though reconstruction will be started immediately, it will be months before operation will again be possible.

The works of the Firestone Hispania S.A. at Basauri, near Bilbao, Spain, have now been opened. The technical direction is in charge of the Firestone Tire & Rubber Co., Akron, O., U. S. A.

It is further learned that Michelin is building a new tire factory at San Sebastian, Spain, which is expected to start production by the end of this year.

Lithuania now produces rubber shoes. Recently a new company, Inkarnis, was formed at Kovno, which plans to make 10,000 pairs daily, with 300 workers.

According to the *Motor Trader*, the French Bergougnan company and Seiberling have entered a 10-year contract whereby Seiberling methods and American machinery will be used in manufacturing tires in France.

World Rubber Absorption—Net Imports

	Long Tons—1933		
CONSUMPTION	May	June	July
United States	44,580	51,326	50,184
United Kingdom	7,627	4,837	6,566
NET IMPORTS			
Australia	425	613	2,347
Austria	196	266	266
Belgium	710	469	...
Canada	1,704	1,441	1,192
Czechoslovakia	432	400	...
Denmark	170	211	120
Finland	117	87	33
France	4,144	4,056	3,774
Germany	4,622	3,639	4,103
Italy	1,278	...	...
Japan	5,289	3,330	1,460
Netherlands	†525	†519	16
Norway	74	79	59
Russia	1,691	2,000	...
Spain	433	541	435
Sweden	175	395	274
Switzerland	33	54	104
Others	*1,450	*1,450	*1,450
Totals	75,675	...	...
Minus U. S. (Cons.)	44,580	51,326	50,184
Total foreign	31,095	...	...

*Estimate to complete table.
†Indicating excess of reexports over imports.
Compiled by Rubber Division, Department of Commerce, Washington, D. C.

British Malaya

An official cable from Singapore to the Malayan Information Agency, Malaya House, 57 Charing Cross, London, S.W.1, England, gives the following figures for August, 1933:

Rubber Exports: Ocean shipments from Singapore, Penang, Malacca, and Port Swettenham

	August, 1933	
To	Sheet and Crepe Rubber Tons	Latex Concentrated Latex and Revertex Tons
United Kingdom	3,740	106
United States	34,982	945
Continent of Europe	8,256	186
British possessions	486	4
Japan	3,307	28
Other countries	225	1
Totals	50,996	1,270

Rubber Imports: Actual, by Land and Sea

	August, 1933	
From	Dry Rubber Tons	Wet Rubber Tons
Sumatra	637	6,996
Dutch Borneo	682	6,682
Java and other Dutch islands	301	38
Sarawak	931	24
British Borneo	237	31
Burma	60	5
Siam	326	600
French Indo-China	203	40
Other countries	66	10
Totals	3,443	14,426

Tire Production Statistics

	Pneumatic Casings—All Types		
	Inventory	Production	Total Shipments
1931	6,219,776	38,992,220	40,048,552
1932	6,115,487	32,067,732	32,200,820
1933			
Jan.	5,789,476	1,806,277	2,077,268
Feb.	5,901,557	1,871,498	1,833,970
Mar.	5,831,981	1,630,319	1,673,502
Apr.	5,418,979	2,498,795	2,923,154
May	5,408,132	4,151,433	4,144,138
June	5,291,952	4,879,939	5,044,363
July	5,475,205	4,570,901	4,397,753
	Solid and Cushion Tires		
1931	38,815	136,261	167,555
1932	23,830	97,089	108,581
1933			
Jan.	21,956	5,536	6,868
Feb.	...	6,829	7,920
Mar.	...	6,795	6,622
Apr.	...	7,149	7,266
May	...	9,229	9,256
June	...	14,843	14,888
July	...	14,956	13,606
	Inner Tubes—All Types		
1931	6,337,570	38,666,376	40,017,175
1932	5,399,551	29,513,246	30,328,536
1933			
Jan.	4,957,298	1,674,557	2,028,100
Feb.	5,085,321	1,778,818	1,681,853
Mar.	5,095,340	1,506,141	1,521,736
Apr.	4,951,399	2,282,298	2,440,555
May	5,105,389	3,760,121	3,570,700
June	4,877,686	4,358,325	4,622,473
July	5,152,187	4,482,077	4,168,919

	Cotton and Rubber Consumption Casings, Tubes, Solid and Cushion Tires		Consumption of Motor Gasoline (100%)
	Cotton Fabric Pounds	Crude Rubber Pounds	Gallons
1931	151,143,715	456,615,428	16,941,750,000
1932	128,981,222	416,577,533	15,698,340,000
1933			
Jan.	7,899,233	27,368,276	1,110,564,000
Feb.	7,263,337	25,123,700	979,608,000
Mar.	6,364,276	21,508,416	1,186,122,000
Apr.	10,460,327	35,169,724	1,267,392,000
May	16,778,354	58,202,264	1,427,958,000
June	19,552,783	67,866,087	1,583,820,000
July	18,709,458	64,936,169	1,447,236,000

Rubber Manufacturers Association, Inc., figures representing approximately 80% of the industry with the exception of gasoline consumption.

Rubber Industry in Far East

NETHERLANDS EAST INDIES

Latex Paste

The Avros has applied for patent for making a latex paste which, it is claimed, is purified, stable, and can be dispersed again with water. The process falls into 2 parts. First the latex is purified; the rubber dispersion is separated from the latex (which may be diluted) at a hydrogen-ion concentration of about 10^{-5} (pH between 4.8 and 5.2) so that a flocculent layer, but not a gel, results. Then this layer is removed from the serum.

The next step is to bring the rubber dispersion, thus purified, to which anticoagulants, antioxidants, or protective colloids are added, to a hydrogen-ion concentration of 10^{-6} at most, after which the whole is concentrated by evaporation, in vacuo or not, at high temperatures, and a dough-like or solid rubber product is obtained which is reversibly dispersed. The required hydrogen-ion concentration is obtained by means of a mixture of sodium acetate and acetic acid.

The advantage of a hydrogen-ion concentration of 10^{-5} is, first, that the flocculent layer can be separated directly from the serum without filtration as is necessary in the process described under United States Patent No. 1,632,759, where the degree of acidity is lower. Secondly, a stable product is obtained, which does not result at other concentrations of acidity.

Evaporation may be followed by spraying according to the Krause-Hopkinson process if a product perfectly free of water is desired.

Clones in Java and Malaya

During a lecture on Malayan clones at a recent planters' meeting, J. S. Vollema compared data concerning these clones and those in Java and Sumatra. It was shown that the outputs of the former average higher than those of Sumatra and Java clones. This difference, however, is considered due rather to the more favorable climatic and soil conditions in Malaya than to inherent superiority of the Malayan clones themselves.

This point seems borne out by observations by Schmöle during a recent visit to Malaya. He found that Avros clones planted in that country yielded at least 40% more than the same clones planted in Java or even Sumatra. In fact these Avros clones gave better outputs than the Malayan clones. On the other hand the tapping system in Malaya is heavier than with the Dutch, cuts being over ½ the circumference alternate daily or every third day; whereas Java clones are tapped over ⅓ the circumference, and the heavier tapping in Malaya, of course, also influences outputs.

Consequently it was pointed out that yields from Malayan clones, if planted in Java, are likely to fall short of those obtained in their native land. A number of the best Malayan clones were planted in the Experimental Garden Tjiomas in 1930 so that comparative data to test this conclusion will soon be available.

Whitford on Rubber Planting

In the *Bergcultures* appears a review of Whitford's "Fourth Report on Plantation Rubber in the Middle East, 1932," and some interesting points are brought forward. Thus Whitford seems to consider that the future potential output of the Netherlands East Indies, both estate and native rubber, will be higher than that of Malaya. Dutch native holdings alone, if tapped to capacity, would exceed Malaya's output in 1933, and by 1934 the Dutch estates would do so. That is, the Netherlands East Indies is the world's greatest rubber producer. As far as native rubber is concerned, Whitford's estimate receives support from the data concerning the native acreage, but the area of estates in Dutch East Indies is below that of the total for Malayan estates so that the estimate in this case must be based on the expectation of higher outputs per unit of area.

As to the conflict between native and estate rubber, Whitford favors, in so far as the usual methods fail in checking the flood of native rubber, a radical change in estate practice. This change would consist in paying more attention to soil conditions and less to general supervision and bark control.

In view of the discussion raised in Malaya when Sir Eric Geddes recently foretold difficulties for planters not foresighted enough to use up-to-date methods to bring down costs, it is worth noting that Whitford does not believe that merely planting high-grade material solves the problem, because—apart from the unexpected reaction of natives to low prices—the depression has taught that many estates were able to reduce costs drastically although they had no superior material and, therefore, no unusually high outputs to help them.

In considering the foregoing we are again faced with the oft-repeated question whether rubber planting, as practiced on some estates, has not become too complicated to be profitable even if very high yields are obtained.

With potential outputs what they are, prices are not likely in the usual course of events to increase to any great extent. On the other hand, as the world depression lifts, coolie wages on rubber estates will have to be raised. Under these circumstances it is doubtful whether the formula: increase yields and cut costs, will continue to work. For with a low price for the commodity, the highest yield is not necessarily the cheapest. It has been shown that above a certain limit, higher outputs per unit of area mean increased cost per pound in transportation; again high-yielding trees are more susceptible to disease than normal trees, and treating disease also adds to costs. Careful analysis of expenditure would reveal other ways in which gains accruing from high outputs are again lost. The new problem facing the planter, then, would seem to be to obtain *optimum*, not *maximum* outputs.

MALAYA

Latex for Roads

The annual report for 1932 of the Rubber Research Institute of Malaya shows investigations on latex for roadways are continuing. Tests with ordinary field latex have so far proved unsuccessful; the large proportion of water prevents the formation of a satisfactory, rubbery material. Better results have been obtained with latex creamed with the aid of gum tragacanth, the dry rubber content averaging 50%. This creamed rubber was mixed with cement to form a surfacing paste. At first difficulty was experienced in that the mixture became extremely hard on drying and showed a strong tendency to crack. To prevent this cracking latex coagulants were added just before laying the paste, sodium silico fluoride in powder form proving satisfactory. Besides, sodium silicate was incorporated as stabilizer, and experimental plots were laid with the mixture. No cracking was observed this time; but abrasion appeared poor, and the texture of the material not quite satisfactory. Experiments in this direction, however, are being continued since so far results are considered encouraging, and it is already evident that road surfaces of creamed latex and cement will be cheaper than

the rubber-capped blocks now used. The deciding factor, though, will have to be the wearing qualities of the surface.

Incidentally, it may here be added that experiments with creaming latex have progressed considerably, but the patent situation has prevented the Institute from publishing and recommending a modified method of creaming recently developed here.

Second Vegetative Generations

The botanical section of the above report gives a table showing comparative yields of budded trees of the first and second vegetative generations, which will help answer the question whether the high-yielding qualities of budded trees will be reproduced in successive vegetative generations established by multiplication from the original buddings of a clone.

On Pilmoor Estate young buddings of clones A.44 and B.84, made from the first buddings of these clones, were established in 1928. In April, 1932, 2 groups of 20 trees were selected for test-tapping, the system being the same as that used for the original test-tapping of the first vegetative generation in 1928, and results were compared with the recorded yields of the first generation. It was found that the yields of the first and second generations of clone A.44 show very good agreement, the average output per tree per tapping of the first generation in 1928 having been 10.4 grams dry, and of the second generation in 1932, 11.1 grams dry. The yields for clone B.84 averaged 7.5 grams for the first generation in 1928 and 5.2 grams for the second generation in 1932. Here the agreement is not so good, but is considered satisfactory for such young trees.

Indo-China

The total area planted to rubber in Indo-China at the end of 1932 was 126,000 hectares, official statistics indicate. Most of the rubber is in Cochin-China, where the area was 97,600 hectares, distributed over the various provinces as follows: 45,100 hectares in Thu-Daumot, 26,000 in Bienhoa, 10,500 in Gia-Dinh, 8,800 in Tay-Ninh, 6,700 in Baria, and 500 in Cholon and Ha-Tien. The rubber area in Cambodge was at the same date 26,700 hectares, and in Annam 1,900 hectares.

The total area in bearing is only 32,500 hectares, but then only 30,282 hectares of the whole were planted before 1924. In the next 2 years about 8,000 hectares more were added. But rubber planting took its real spurt forward in Indo-China in the period 1926-1929, inclusive, when 77,225 hectares were added. An increasing proportion of these areas was planted with budded material so that at the end of 1932 the total budded area was 36,700 hectares, or 29% of the entire planted area.

The actual number of Hevea trees on Indo-China estates is given as 30,000,000 at the end of 1932, of which 7,220,000 were being tapped. The output from these trees in 1932 was 14,607 metric tons against 11,900 tons in 1931 and 10,453 tons in 1930.

At present, therefore, France still has to get a considerable portion of her rubber needs from foreign rubber producers, but once the large budded areas are mature, it is to be expected that she will be independent of foreign sources of supply.

Ceylon

The first report on Ceylon clones has just been published in the *Tropical Agriculturist* of June, 1933. Until recently no clones raised from Ceylon mother trees were old enough to be test-tapped; so Ceylon planters had to import proved material from Malaya and the Dutch East Indies. This importing will probably not be necessary much longer since tests indicate that Ceylon has clones as promising as those of any other country. Certainly the most reliable material for local planters to use would be that tested and proved under the conditions in which it is ultimately to be grown.

The yields of 2 clones at the Experiment Station Nivitigalakele: namely, Govinna 771 and Lavant 28, averaged 13.1 grams and 8.6 grams per tree per tapping. The former figure compares favorably with early yields of proved Avros clones; the latter is rather low, but a satisfactory increase was noted throughout the year.

Very promising yields have been obtained from 2 Hillcroft clones from high-yielding mother trees on Hillcroft Estate, established on Stenness Estate in the Kalutara district in 1926. HC.28 averaged 41.9 grams and HC.34, 31.4 grams per tree per tapping. The latter clone, however, has developed several undesirable characteristics: it grows slowly; the bark has a marked tendency to split, exposing the wood; the trees are susceptible to bark rot; and the rubber is dark.

Milleniya and Wawulugala clones are not easy to judge since they have been tapped with 2 half spirals on opposite sides every 3 days, a system which yields about double the output obtained with the usual systems. Clone M.191 averaged 39.2 grams, and clone W.259, 34.1 grams.

It is interesting to note that outputs of clones from the famous Henerat-goda 2 are very disappointing, averaging only 5 grams dry on a half spiral cut alternate daily.

The Rubber Research Scheme has recommended that the Government make a financial grant from the former Rubber Restriction Scheme Fund to the Rubber Growers' Association, for the development of new uses for rubber. Efforts to find high yielding budwood will be continued.

Packing Plantation Rubber

The Rubber Trade Association of New York, Inc., 95 Broad St., New York, N. Y., adopted the following resolution on June 7, which was sent to the various foreign rubber associations, suggesting to the members that strict observance of these regulations would prevent any complaints resulting from faulty packing.

Resolution

All shipment contracts entered into on and after September 30, 1933, for the purchase of ribbed smoked sheets in bales for shipment from the primary markets to the United States, direct or indirect, on and after September 30, 1933, shall be subject to the following conditions on the part of the foreign seller:

1. WEIGHT. The maximum weight of each bale shall be 250 pounds net per 5 cubic feet.

2. PACKING. Before covering with burlap, each bale of rubber shall be properly strapped by using not less than 3 iron bands of a minimum width of ⅝-inch. These bands should preferably be galvanized. Wires must *not* be used for strapping.

Talcum powder shall be liberally sprinkled on tops, sides, and bottoms of the rubber before the burlap is sewed on.

Nothing inferior to new 12-ounce Hessians shall be used for covering. Second-hand rice or sugar bags, without holes or patches, are also satisfactory. All burlap must first be liberally coated with a proper mixture of sago flour, water, and silicate of soda to prevent the covering from adhering to the rubber. A generous application of this solution must be given to insure proper absorption.

3. WRAPPERS. Preference shall be given to shippers who carefully and completely wrap each bale on all sides with equal quality rubber. When wrapper sheets are used, talc should be sprinkled on both sides of the wrappers.

Typical Deodorized Stock

In the following formula for molding stock the odor of smoked sheet is eliminated by the use of an aromatic deodorant. A number of such deodorants are available for lessening sales resistance caused by unpleasant odors in finished rubber products.

In stock made after this formula the typical smoked sheet odor is absent, and only a slight rubber odor remains. This condition enables smoked sheets to be used in place of the more expensive pale crepe rubber. An increased proportion of Para-Dor will entirely overcome the rubber odor.

TYPICAL MOLDED STOCK COMPOUND

Smoked sheets	65.50
Blue base 50/50	1.30
Stearic acid	0.65
Whiting	16.40
Zinc oxide	3.29
Lithopone	10.50
Ureka C	0.82
Guantol	0.16
Sulphur	1.30
Para-Dor No. 5145	0.08
	100.00

Cure—15 minutes at 285° F.

Patents and Trade Marks

MACHINERY

United States

1,920,720. **Tire Retreader.** W. B. Thurman and H. J. Woock, both of Lodi, Calif., assignors to Super Mold Corp.

1,920,852. **Tire Retreader.** N. Feinen, Buffalo, N. Y.

1,920,961. **Inflatable Article Mold.** A. V. Anderson, Beacon, assignor to New York Rubber Corp., New York, both in N. Y.

1,920,977. **Sole Laying Machine.** S. J. Finn, Beverly, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.

1,921,307. **Golf Ball Marker.** C. E. Broman, Sparta, and W. H. Nowak, Grand Rapids, both in Mich.

1,921,455. **Sheet Rubber Ornamenting Apparatus.** W. W. De Laney, assignor to Seamless Rubber Co., both of New Haven, Conn.

1,921,473 and 1,921,474. **Tire Building Former.** G. L. Mather, Milwaukee, Wis., assignor to Fisk Rubber Co., Chicopee Falls, Mass.

1,921,533. **Vulcanizer Fluid Pressure Connection.** C. E. Maynard, Northampton, assignor to Fisk Rubber Co., Chicopee Falls, both in Mass.

1,921,571. **Golf Ball Marker.** E. A. Jones, Oakland, Calif.

1,921,579. **Tire Former.** A. Otto, Grosse Pointe Park, assignor to Morgan & Wright, Detroit, Mich.

1,921,594. **Ply Stretcher.** W. S. Thompson, assignor to Morgan & Wright, both of Detroit, Mich.

1,921,621. **Spherical Article Classifier.** W. D. Kmentt, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,921,672. **Ball Mill Lining.** F. L. Haushalter, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,922,137. **Sole Molding Machine.** E. E. Murphy, Newburyport, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.

1,922,471. **Tire Tube Apparatus.** J. F. Cavanagh, assignor to W. W. Potter, both of Pawtucket, R. I.

1,922,740. **Tire Spreader.** J. Matchey, Whitehall, Wis.

1,922,852. **Branding Apparatus.** W. E. Humphrey, Jeannette, Pa., assignor to Pennsylvania Rubber Co., a corporation of Pa.

1,922,937. **Extrusion Molding Press.** P. Eckert, Cologne, assignor to Eckert & Ziegler G. m. b. H., Cologne-Braunsfeld, both in Germany.

1,923,027. **Automatic Mill Mixer.** H. D. Stevens, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,923,062. **Multiple Bead Positioning Ring.** H. C. Bearman, Springfield, assignor to J. B. Pierce and C. A. Dana, as receivers of Fisk Rubber Co., all of Chicopee Falls, all in Mass.

1,923,166. **Belt Press Equalizer.** C. F. Schnuck, New Haven, assignor to Farrel-Birmingham Co., Inc., Ansonia, both in Conn.

1,923,296. **Material Tester.** M. Castricum, Springfield, assignor to Fisk Rubber Co., Chicopee Falls, both in Mass.; J. B. Pierce and C. A. Dana, receivers.

1,923,699. **Bead Builder.** G. G. Andrews, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,923,705. **Tire Building Chuck.** J. F. Campbell and J. D. Thomson, assignors to Goodyear Tire & Rubber Co., all of Akron, O.

1,923,728. **Tire Mold Engraver.** H. J. Hoenes, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,923,733. **Thin Rubber Article Apparatus.** E. S. Killian, Akron, O.

1,923,736. **Vulcanizing Device.** K. R. Lewis and D. C. Waugh, assignors to Goodyear Tire & Rubber Co., all of Akron, O.

1,924,005. **Washing Machine.** H. D. Stevens, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,924,018. **Mold Treating Apparatus.** W. E. Begley and H. H. McGregor, assignors to Firestone Tire & Rubber Co., all of Akron, O.

1,924,067. **V-Belt Machine.** W. H. Gerstenslager, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,924,083. **Belt Vulcanizer.** R. S. Carter and H. G. Dick, assignors to Goodyear Tire & Rubber Co., all of Akron, O.

Dominion of Canada

332,496. **Belt Measurer.** Goodyear Tire & Rubber Co., assignee of W. H. Gerstenslager, both of Akron, O., U. S. A.

332,497. **Tire Bead Builder.** Goodyear Tire & Rubber Co., assignee of G. G. Andrews, both of Akron, O., U. S. A.

332,498. **Hose Making Apparatus.** Goodyear Tire & Rubber Co., assignee of G. H. Barnes, Jr., both of Akron, O., U. S. A.

332,890. **Tire Shaper.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of A. O. Abbott, Jr., Detroit, Mich., U. S. A.

333,049. **Fabric Cutter.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of G. K. McNeill, Detroit, Mich., U. S. A.

333,060. **Belt Tester.** Goodyear Tire & Rubber Co., assignee of W. H. Gerstenslager, both of Akron, O., U. S. A.

333,232. **Liquid Separator.** De Laval Separator Co., New York, N. Y., U. S. A., assignee of S. A. B. Dahlgren, Alsten, Sweden.

333,320. **Electric Vulcanizer.** P. Petersen and J. Anderson, co-inventors, both of Calgary, Alta.

333,414. **Multicolored Article Matrix.** Kelly-Springfield Tire Co., assignee of A. F. Hardman, both of Cumberland, Md., U. S. A.

333,506. **Surgical Glove Applying Means.** H. E. and R. W. Breuls, co-inventors, both of Toronto, Ont.

333,594. **Filament Making Apparatus.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of A. W. Keen, Passaic, N. J., U. S. A.

333,597. **Tire Molding Apparatus.** Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont., assignee of H. Willshaw, Birmingham, England.

United Kingdom

391,455. **Sheet Rubber Cutter.** F. Frieg, Buckinghamshire.

391,853. **Ball Mold.** S. Kay & Co., Ltd., and W. Kay, both of Bury.

391,921. **Extrusion Molding Machine.** World Bestos Corp., Paterson, assignee of W. Nanfeldt, Clifton, both in N. J., U. S. A.

392,404. **Heating and Cooling Press.** (Firm of) H. Krantz, Aachen, Germany.

Germany

582,571. **Tube Repair Device.** M. Reiterer, Wimpassing, Lower Austria. Represented by N. Meurer, Cologne.

582,981. **Vulcanizer.** G. Roese, Stettin.

PROCESS

United States

*18,910. **Coloring Toy Balloons.** J. C. Gibson, assignor to Pioneer Rubber Co., both of Willard, O.

1,920,525. **V-Belt.** R. Roderwald, Berlin, Germany, assignor to Dayton Roderwald Co., Dayton, O.

1,921,015. **Packaging Gas Containing Objects.** J. M. Young, Brooklyn, assignor to American Can Co., New York, both in N. Y.

1,921,083. **Cementing Soles.** C. A. Hill, Brockton, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.

1,921,108. **Maintaining Tennis Ball Inflation.** D. F. Twiss, A. E. T. Neale, and A. S. Carpenter, assignors to Dunlop Rubber Co., Ltd., all of Birmingham, England.

1,921,130. **Articles from Aqueous Dispersions.** E. A. Murphy, E. W. B. Owen, and D. F. Twiss, all of Birmingham, assignors to Dunlop Rubber Co., Ltd., London, all in England.

1,921,575. **Latex Concentration and Purification.** J. McGavack, Jackson Heights, N. Y., assignor to Naugatuck Chemical Co., Naugatuck, Conn.

1,921,623. **Splicing Rubber Articles.** C. W. Leguillon, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,922,020. **Elastic Webbing.** G. S. Van Voorhis, Littleton, assignor to United Elastic Corp., Easthampton, both in Mass.

1,922,444. **Fabric.** W. S. Libbey, Lewiston, Me., assignor to W. S. Libbey Co., a corporation of Me.

1,922,841. **Fish Lure.** E. Cooley, Trinidad, Colo.

1,922,943. **Shirrable Fabric.** A. A. Gobeille, assignor to Columbia Narrow Fabric Co., Shannock, R. I.

1,922,944. **Elastic Woven Fabric.** A. A. Gobeille, assignor to Columbia Narrow Fabric Co., Shannock, R. I.

1,923,169. **Sole.** R. C. Simmons, Beverly, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.

1,923,215. **Latex-Joined Leather, Etc.** O. P. Krogh, Copenhagen, Denmark.

* Reissue.

1,923,512. **Ornamental Sheet Fabric.** J. Stein, Brooklyn, N. Y.
1,923,524. **Goods from Aqueous Dispersions.** H. C. Young and C. Hemm, both of Manchester, assignors to Dunlop Rubber Co., Ltd., Birmingham, all in England.

Dominion of Canada

332,335. **Floor Covering.** Linoleum Mfg. Co., Ltd., assignee of A. A. Godfrey, both of London, England.
332,474. **Vulcanized Product.** Brown Co., assignee of M. O. Schur, both of Berlin, N. H., U. S. A.
332,663. **Metal Coating.** Dunlop Rubber Co., Ltd., London, assignee of A. Lakeman, Birmingham, both in England.
332,797. **Spongy Rubber.** L. E. Howard, London, England.
332,892. **Golf Ball.** Dunlop Rubber Co., Ltd., London, assignee of D. F. Twiss and A. E. T. Neale, co-inventors, both of Birmingham, all in England.
332,904. **Hollow Rubber Article.** India Rubber, Gutta Percha & Telegraph Works Co., Ltd., assignee of E. A. Phillips, both of London, England.
333,062. **Tire.** Goodyear Tire & Rubber Co., assignee of R. W. Sohl, both of Akron, O., U. S. A.
333,229. **Belting.** James Dawson & Son, Ltd., assignee of J. Dawson, Jr., both of Lincoln, England.
333,432. **Artificial Leather.** Paper Patents Co., Neenah, Wis., assignee of A. C. Sewall, Richmond, Me., both in the U. S. A.
333,593. **Rubber and Leather Article.** Dominion Rubber Co., Ltd., Montreal, assignee of R. B. Marr, Montreal West, both in P. Q.
333,663. **Goods from Aqueous Rubber Dispersions.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, assignees of E. A. Murphy, Birmingham, England.

United Kingdom

390,761. **Rubber-Reenforced Leather Sole.** S. Kay & Co., Ltd., and W. Kay, both of Bury.
391,664. **Molding Rubber Articles.** G. E. Heyl, London.
391,735. **Collecting Latex.** D. M. Vis, The Hague, Netherlands.
391,834. **Beauty Bandage.** O. Klein, Vienna, Austria.
391,868. **Goods from Rubber Dispersions.** S. Kay & Co., Ltd., and W. Kay, both of Bury.
392,115. **Goods from Rubber Dispersions.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of E. B. Newton, Akron, O., U. S. A.
392,170. **Packing Tin Plates.** Dunlop Rubber Co., Ltd., London, Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, and H. S. Gifford, Manchester.

Germany

582,604. **Firmly Adhering Coatings on Metal or Stone.** H. Beckmann, Berlin-Zehlendorf.

CHEMICAL

United States

1,920,298. **Factice.** M. Faldini, assignor to Societá Italiana Pirelli, both of Milan, Italy.
1,920,352. **Carbon Black.** R. H. Brownlee, Pittsburgh, Pa.
1,921,007. **Age Resister.** W. L. Semon, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.
1,921,091. **Accelerator.** P. I. Murrill, E. Norwalk, Conn., assignor to R. T. Vanderbilt Co., Inc., New York, N. Y.
1,921,375. **Accelerator.** G. H. Stevens, Newark, N. J.
1,921,546. **Accelerator.** R. L. Sibley, Nitro, W. Va., assignor to Rubber Service Laboratories Co., Akron, O.
1,921,587. **Accelerator.** W. L. Semon and P. C. Jones, both of Cuyahoga Falls, O., assignors to B. F. Goodrich Co., New York, N. Y.
1,921,676. **Latex Massage Cream.** M. M. Kahn, Belleville, N. J.
1,922,743. **Synthetic Resin.** C. G. Moore and E. H. Drake, both of Lakewood, assignors to Glidden Co., Cleveland, all in O.
1,922,923. **Synthetic Rubber.** J. Baer, Uster, Switzerland.
1,923,622. **Artificial Leather.** R. B. Hill, assignor to Brown Co., both of Berlin, N. H.
1,923,706 and 1,923,707. **Age Resister.** A. M. Clifford, Stow, assignor to Goodyear Tire & Rubber Co., Akron, both in O.
1,923,723. **Insoluble Sulphur.** A. J. Gracia, Cuyahoga Falls, assignor to Goodyear Tire & Rubber Co., Akron, both in O.
1,923,735. **Age Resister.** W. M. Lauter, assignor to Goodyear Tire & Rubber Co., both of Akron, O.
1,923,911. **Age Resister.** H. M. Bunbury, Prestwich, and J. S. H. Davies, Crumpsall, and W. J. S. Naunton, Prestwich, all in England, assignors to Imperial Chemical Industries, Ltd., a corporation of Great Britain.
1,923,932. **Rubber Vulcanization.** M. Jones, Crumpsall, and W. J. S. Naunton, Prestwich, both in England, assignors to Imperial Chemical Industries, Ltd., a corporation of Great Britain.
1,923,957. **Accelerator.** J. Teppema, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

Dominion of Canada

332,391. **Rubber Composition.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, assignees of E. A. Murphy and A. Niven, co-inventors, both of Birmingham, England.
332,392. **Porous Rubber.** R. H. Koppel, assignee of Zellkautschuk G.m.b.H., both of Aachen, Germany, assignee of R. Ditmar, Graz, Austria.
332,483. **Age Resister.** Canadian Industries, Ltd., Montreal, P. Q., assignee of H. M. Bunbury and W. J. S. Naunton, both of Prestwich, and J. S. H. Davies, Crumpsall, co-inventors, all in England.
332,488. **Vulcanization Process.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of S. M. Cadwell, Grosse Pointe, Mich., U. S. A.
332,489. **Vulcanization Process.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of L. H. Howland, Nutley, N. J., U. S. A.
332,752. **Aqueous Dispersion Product.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, assignees of G. W. Trobridge, Birmingham, England.
332,762. **Protective Covering.** H. Dreyfus, assignee of W. H. Moss, both of London, England.
332,778 and 332,779. **Decorative Rubber Composition.** A. E. Bond, Cheam, England.
332,855. **Accelerator.** Canadian Industries, Ltd., Montreal, P. Q., assignee of H. M. Bunbury and W. J. S. Naunton, both of Prestwich, and W. A. Sexton, Huddersfield, co-inventors, all in England.
332,999. **Liquid Rubber.** H. Plauson, Darmstadt, Germany.
333,114. **Sponge Rubber Compound.** R. R. Olin, inventor, and C. P. Hall, assignee of ½ of the interest, both of Akron, O., U. S. A.
333,204. **Artificial Leather.** Brown Co., assignee of M. O. Schur, both of Berlin, N. H., U. S. A.
333,393. **Golf Ball.** Celluloid Corp., Newark, assignee of J. F. Walsh, S. Orange, both in N. J., U. S. A.
333,400. **Accelerator.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of W. P. TER Horst, Wayne, N. J., U. S. A.
333,526. **Latex Paper Manufacture.** A. Ferretti, Milan, Italy.

United Kingdom

391,356. **Compound Glass.** A. Kämpfer, Paris, France, and A. C. Plötze, Berlin, Germany.
391,689. **Adhesive.** G. E. Heyl, London.
391,765. **Plasticizing Agent.** Goodyear Tire & Rubber Co., Akron, assignee of H. A. Endres, Cuyahoga Falls, both in O., U. S. A.
391,798. **Pencil Lead.** E. Rademacher, Dusseldorf, Germany.
391,854. **Latex Composition.** Dunlop Rubber Co., Ltd., London, and D. F. Twiss, Birmingham.
391,973. **Rubber Paint.** Dunlop Rubber Co., Ltd., London, and E. A. Murphy and D. N. Simmons, both of Birmingham.
391,997. **Wall Facing Composition.** G. E. Heyl, London.
392,023. **Plastic Mass.** E. Sonnenfeld, Paris, France.
392,046 and 392,047. **Accelerator.** I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.
392,177. **Brake Lining Composition.** H. B. Denman, Birmingham, Mich., U. S. A.
392,246. **Cement Composition.** J. Lyons & Co., Ltd., and E. B. Hughes, both of London.
392,342. **Compounding.** Henkel & Cie, Ges., Dusseldorf, Germany.
392,362. **Cork - Rubber Composition.** Armstrong Cork Co., assignee of D. H. Forbes, both of Lancaster, Pa., U. S. A.
393,093. **Accelerator.** Goodyear Tire & Rubber Co., Akron, O., U. S. A.
393,132. **Latex Adhesive.** A. B. Poschel, Brooklyn, N. Y., U. S. A.
393,172. **Electrophoresis.** E. I. du Pont de Nemours & Co., Wilmington, Del., U. S. A.

Germany

582,286. **Vulcanizing Synthetic Rubber.** I. G. Farbenindustrie A. G., Frankfurt a. M.
582,287. **Rubber Substitute.** Imperial Chemical Industries, Ltd., London, England. Represented by A. Bohr and H. Fincke, both of Berlin.
582,382. **Coagulation Products from Powdered or Crumbed Latex.** Dun-

lop Rubber Co., Ltd., and Anode Rubber Co., Ltd., both of London, England. Represented by R. and M. M. Wirth, C. Weihe, and H. Weil, all of Frankfurt a. M., and T. R. Koehnhorn.

582,467. **Purifying Rubber or Latex.** Electrical Research Products, Inc., New York, N. Y., U. S. A. Represented by B. Kugelmann, Berlin.

582,565. **Rubber Sulphone Acids.** I. G. Farbenindustrie A. G., Frankfurt a. M.

582,567. **Accelerator.** I. G. Farbenindustrie A. G., Frankfurt a. M.

583,145. **Threads, Films, Etc. from Natural Rubber.** I. G. Farbenindustrie A. G., Frankfurt a. M.

583,146. **Porous or Microporous Objects from Aqueous Dispersions.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Guernsey, Channel Islands. Represented by C. Wiegand, Berlin.

583,251. **Conversion Products from Rubber.** Dewey & Almy Chemical Co., N. Cambridge, Mass., U. S. A. Represented by G. Lotterhos, Frankfurt a. M.

583,278. **Vulcanizing Process.** R. T. Vanderbilt Co., Inc., New York, N. Y., U. S. A. Represented by K. Michaelis and H. Joseph, Berlin.

583,342. **Protection against Aging.** I. G. Farbenindustrie A. G., Frankfurt a. M.

GENERAL

United States

1,920,185. **Glare Screen.** W. C. Carr, Jr., Richmond, Va.; H. S. Carr, guardian, assignor to W. C. Carr, Sr.

1,920,345. **Fog Penetrating Apparatus.** C. Biernat, Glasford, Ill.

1,920,372. **Papier-Mâché Article.** A. C. Fulton, assignor to Aetna Rubber Co., both of Ashtabula, O.

1,920,436. **Vibration Insulator.** A. L. Riker, Fairfield, assignor to Rubber Shock Insulator Corp., Bridgeport, both in Conn.

1,920,482. **Belt.** H. A. Toulmin, Jr., assignor to Dayton Rubber Mfg. Co., both of Dayton, O.

1,920,506. **Traction Device.** O. F. Hipkins, Port Deposit, Md.

1,920,705. **Bust Holder.** V. Madsen, Paris, France.

1,920,840. **Hose Nozzle.** M. Chouinard, Montreal, and J. P. Paradis, Longueuil, both in P. Q., Canada; said Paradis assignor to said Chouinard.

1,920,857. **Dental Impression Material.** L. E. Harrison, Long Beach, assignor, by mesne assignments, to Dental Plastics Co., Los Angeles, both in Calif.

1,920,864. **Cigarette Package Frame.** A. Jacobsen, Brooklyn, N. Y.

1,920,876. **Adjustable Garment Supporter.** H. Q. Moore, assignor to George C. Moore Co., both of Westerly, R. I.

1,920,943. **Self - Supporting Hosiery.** W. L. Thompson, assignor to Real Silk Hosiery Mills, Inc., both of Indianapolis, Ind.

1,920,960. **Golf Ball Cleaner.** S. A. Cogsdill, assignor to Cogsdill Mfg. Co., both of Detroit, Mich.

1,921,017. **Toy Gun.** P. Weber, Magdeburg, Germany, assignor, by mesne assignments, to Radio Patents Corp., New York, N. Y.

1,921,085. **Electrical Vacuum Cleaner.** K. Korittke, Berlin, assignor to Siemens-Schuckertwerke A. G., Berlin-Siemensstadt, both in Germany.

1,921,094. **Bath Spray Connecter.** J. W. Patterson, assignor to Seamless Rubber Co., Inc., both of New Haven, Conn.

1,921,177. **Shoe.** C. Watanabe, Los Angeles, Calif.

1,921,252. **Sponge Rubber Pad Backing Member.** A. Graf, Chicago, Ill.

1,921,270. **Fountain Pen Pocket Sheath.** D. H. Talt, Stockton, Calif.

1,921,271. **Pajama Belt.** L. Lubin, Brooklyn, N. Y.

1,921,447. **Electric Fitting Accessories.** L. Barnett, Brooklyn, N. Y.

1,921,456. **Sheet Rubber Product.** W. W. De Laney, assignor to Seamless Rubber Co., Inc., both of New Haven, Conn.

1,921,523. **Ball.** T. H. Hart, Birmingham, England.

1,921,548. **Juvenile Tiring.** H. B. Soulen, Milwaukee, Wis., assignor to C. A. Dana and J. B. Pierce, receivers for Fisk Rubber Co., all of Chicopee Falls, Mass.

1,921,550. **Tire Pressure Indicator.** J. W. Swallen, Kansas City, Mo.

1,921,561. **Cushion Support.** B. Christmas, Pittsburgh, Pa.

1,921,646. **Waterproof Clothing.** G. S. Yeaton, Dorchester, and L. Blauer, Arlington Heights, assignors to American Rubber Co., Cambridge, all in Mass.

1,921,772. **Pneumatic Tire.** W. H. Paull, Birmingham, assignor to Dunlop Rubber Co., Ltd., London, both in England.

1,922,084. **Catheter and Drainage Tube.** J. W. Gerow, assignor of ½ to C. A. Stephens, both of Reno, Nev.

1,922,127. **Pail Silencer.** J. R. Foley, New York, N. Y.

1,922,291. **Balloon Tire.** A. Hargraves, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,922,413. **Garter.** M. F. Ascher, Chicago, Ill.

1,922,431. **Universal Joint Flexible Boot.** H. D. Geyer, assignor to Inland Mfg. Co., both of Dayton, O.

1,922,556. **Caster Wheel.** C. W. Millet, Evansville, Ind.

1,922,621. **Mop.** H. Hertzberg, New York, N. Y.

1,922,643. **Electrical Connecter.** E. V. Sundt and B. Kollath, both of Chicago, Ill.

1,922,652. **Self - Sealing Collapsible Tube.** E. Andersen, Woodhaven, N. Y.

1,922,726. **Insulated Cable.** W. A. Del Mar, Greenwich, Conn., assignor to Habirshaw Cable & Wire Corp., New York, N. Y.

1,922,900. **Tag Holder.** L. N. Plante, assignor to Progressive Tool & Die Co., Inc., both of Worcester, Mass.

1,923,065. **Foldable Container.** J. A. Clemens, Providence, R. I., assignor to Davol Rubber Co., a corporation of R. I.

1,923,086. **Automobile Brake Shield.** R. J. Givens, Nampa, Idaho.

1,923,099. **Track for Track - Laying Vehicles.** H. A. Knox, Davenport, Iowa.

1,923,112. **Corset.** G. L. Nickerson, Milford, assignor to La Resista Corset Co., Bridgeport, both in Conn.

1,923,163. **Bumper.** E. H. Noelting, assignor to Faultless Caster Co., both of Evansville, Ind.

1,923,306. **Corrosive Fluid Valve.** K. R. Hagen, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,923,409. **Ointment Applying Syringe.** C. E. Ziegler, assignor to Clinical Supplies, Inc., both of Pittsburgh, Pa.

1,923,501. **Air Valve.** I. D. Perry, assignor to A. S. Perry, both of Chicago, Ill.

1,923,542. **V-Shaped Belt.** H. R. and C. H. Keyes, both of Los Angeles, Calif.; said C. H. Keyes assignor to H. R. Keyes.

1,923,661. **Punctureproof Tire.** J. Carey, New York, N. Y.

1,923,725. **Display in Aircraft.** H. H. Haines, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,923,775. **Valve Stem.** J. C. Crowley, Cleveland Heights, assignor to Dill Mfg. Co., Cleveland, both in O.

1,923,776. **Pressure Gage.** J. C. Crowley, Cleveland Heights, assignor to Dill Mfg. Co., Cleveland, both in O.

1,923,890. **Ball Bladder Valve.** M. Scudder, Clayton, assignor to Rawlings Mfg. Co., St. Louis, both in Mo.

1,923,926. **Elastic Cord.** C. Faure-Roux, assignor to Etablissements Ch. Faure-Roux, both of St.-Chamond, France.

1,924,051. **Arch Supporter.** L. Pignanelli, Tacoma, Wash.

Dominion of Canada

332,253. **Lubricant Thermostatical Device.** H. Kreidel, Wiesbaden, Germany.

332,254. **Hide and Skin Stretcher.** A. Long, Ottawa, Ont.

332,273. **Inkwell.** L. Stiemert, Masson, P. Q.

332,348. **Composite Mat.** Ohio Rubber Co., assignee of B. Bronson, both of Cleveland, O., U. S. A.

332,429. **Shoe.** I. Goth, Berlin, Germany.

332,442. **Flexible Coupling.** H. C. Lord, Erie, Pa., U. S. A.

332,448. **Roller Skate.** R. M. Nichol, Medicine Hat, Alta.

332,499. **Advertising Novelty.** Goodyear Tire & Rubber Co., Akron, assignee of A. D. Weigolt, Cleveland, both in O., U. S. A.

332,507. **Door Antirattler.** Kastar Specialty Mfg. Co., Inc., assignee of L. Stark, both of New York, N. Y., U. S. A.

332,605. **Squeegee.** J. M. Oberti, San Francisco, Calif., U. S. A.

332,652. **Frictional Packing.** Chilton Pen Co., Inc., Long Island City, N. Y., assignee of Vaughn-Upton Co., Boston, assignee of H. J. Upton, Medford, both in Mass., all in the U. S. A.

332,717. **Tire Pressure Gage.** Service Equipment Co., assignee of G. E. Farley, both of S. Gate, Calif., U. S. A.

332,773. **Padded Horseshoe Calk.** A. Anderson, Hamilton, Ont.

332,902. **Inflatable Article.** Hungarian Rubber Goods Factory, Ltd., assignee of J. Kelemen, Heir-at-Law of L. Kelemen, deceased, and Z. Keleti, all of Budapest, Hungary.

332,928. **Vibration Insulator.** Rubber Shock Insulator Corp., Bridgeport, assignee of A. L. Riker, Fairfield, both in Conn., U. S. A.

332,929. **Tire Valve Stem.** A. Schrader's Son, Inc., Brooklyn, assignee of J. Wahl, New York, both in N. Y., U. S. A.

332,980. **Syringe.** S. D. Goldberg, Brooklyn, N. Y., U. S. A.

332,994. **Propulsion Unit.** J. A. McGrew, Albany, N. Y., U. S. A.
333,061. **Composite Fabric.** Goodyear Tire & Rubber Co., assignee of W. C. Calvert, both of Akron, O., U. S. A.
333,080. **Medical Applicator.** Northam Warren Corp., New York, assignee of M. T. Brekke, Scarsdale, both in N. Y., U. S. A.
333,081. **Syringe and Tube.** Novocol Chemical Mfg. Co., Inc., assignee of S. D. Goldberg, both of Brooklyn, N. Y., U. S. A.
333,276. **Tire Puncture Indicator.** Scammel Lorries, Ltd., assignee of O. D. North and P. G. Hugh, co-inventors, all of London, England.
333,342. **Chewing Gum.** G. B. Mustin, Lansdowne, Pa., U. S. A.
333,397. **Valve Closed Metal Container.** Continental Can Co., Inc., New York, assignee of W. F. Punte, Syracuse, both in N. Y., U. S. A.
333,529. **Bathing Suit.** W. M. Gallagher, Vancouver, B. C.
333,553. **Rope Grip.** A. Redler, Sharpness, England.
333,595. **Emergency Brake Lever Pad.** Duffy Mfg. Co., assignee of J. F. Duffy, both of Holland, Mich., U. S. A.
333,596. **Paving Unit.** Dunlop Rubber Co., Ltd., London, assignee of A. Lakeman, Birmingham, both in England.

United Kingdom

389,939. **Screw Fan.** General Electric Co., Ltd., London, and N. F. T. Saunders, Birmingham.
390,147. **Tire.** S. A. H. Holstrup, Copenhagen, Denmark.
390,164. **Buoyant Garment.** F. H. Rogers, London. (A. L. Howarth, New York, N. Y., U. S. A.)
390,300. **Galosh.** P. R. Youl, Glasgow, Scotland.
390,351. **Stocking Heel Protector.** S. Lucking, Chester.
390,368. **Sole.** G. Palmer and T. J. F. Tucker, both of Sydney, Australia.
390,369. **Sole.** T. D., J., G., and H. G. Lewis (trading as C. & E. Lewis), all of Northampton.
390,537. **Garment Waistband.** A. A. Lind and J. D. Best, both of Dunedin, New Zealand.
390,559. **Pneumatic Tire.** S. Uhrig, Chemnitz, Germany.
390,736. **Boot.** H. A. Wainwright, Victoria, Australia.
390,772. **Vehicle Wheel.** W. W. Triggs, London. [F. F. Andersen (trading as F. F. Andersen Trading), Oslo, Norway.]
390,816. **Lubricating Oil Can.** H. H. Burton and Leicester Rubber Co., Ltd., both of Leicester.
390,917. **Hose Suspender.** H. Chisholm and N. V. C. Turner, both of London.
390,939. **Brassiere.** H. A. Brown, Cheshire.
390,950. **Paving Block.** Dunlop Rubber Co., Ltd., London, and A. Lakeman, Birmingham.
390,953. **Railway Vehicle Wheel.** Waggonfabrik A. G. and R. Ahrens, both of Uerdingen, Germany.
390,976. **Pipe Liner.** W. T. Tate, Rockdale, Australia.
390,983. **Hair Waver.** G. Blair, London.
391,020. **Bottle Capsuling Device.** Boldt & Vogel Ges., Altona, Germany.
391,022. **Electrolytic Cell.** L. Mellersh-Jackson, London. (Siemens & Halske A. G., Berlin, Germany.)
391,090. **Inflating Valve.** Tyer Rubber Co., Andover, Mass, U. S. A.
391,130. **Non-Return Valve.** R. H. Davis, London.
391,160. **Vehicle Wheel.** S. J. Hipper and E. Short, both of Victoria, Australia.
391,176. **Anaesthetic Appliance.** W. B. Primrose, Glasgow, Scotland.
391,177. **Hypodermic Syringe.** Novocol Chemical Mfg. Co., Inc., assignee of S. D. Goldberg, both of Brooklyn, N. Y., U. S. A.
391,289. **Hydraulic Ram Waste Valve.** H. V. Blake, Accrington.
391,298. **Flashlight Lamp.** Naamlooze Vennootschap Philips' Gloeilampenfabrieken, Eindhoven, Holland.
391,387. **Vehicle Engine Mounting.** P. Riley, Conventry.
391,499. **Castor.** S. B. Woolf, London.
391,503. **Hypodermic Syringe.** A. H. Stevens, London. (Novocol Chemical Mfg. Co., Inc., Brooklyn, N. Y., U. S. A.)
391,528. **Footwear Cover.** H. J. Sexton and F. C. Adcock, both of Norwich.
391,627. **Heel.** Industrie-U. Handelsges., Vaduz, Liechtenstein.
391,635. **Artificial Limb Ankle Joint.** C. H. Davies, Philadelphia, Pa., U. S. A.
391,650. **Cow Milker.** J. and A. Persoons, both of Thildonck, Belgium.
391,678. **Horseshoe.** G. Thuillier, Saône-et-Loire, France.
391,685. **Vacuum Flask Stopper.** A. H. Martin, London.
391,692. **Floor Polisher.** H. Eaton-Williams, London.
391,756. **Nurser Covering.** Faultless Rubber Co., assignee of T. W. Miller, both of Ashland, O., U. S. A.
391,762. **Soldering Electric Lamps.** Naamlooze Vennootschap Philips' Gloeilampenfabrieken, Eindhoven, Holland.
391,875. **Leather Abrading Device.** British United Shoe Machinery Co., Ltd., C. H. Heather, and C. M. Bagshaw, all of Leicester.
391,891. **Pressure Reducing Valve.** Royles, Ltd., and A. G. Royle, both of Lancashire.
392,013 and 392,014. **Hand Knitting Appliance.** S. Shephard, Nottinghamshire.
392,138. **Tire Valve.** Michelin & Cie., Clermont Ferrand, Puy-de-Dome, France.
392,211. **Safety Razor.** J. Farrelly, Glasgow, Scotland.
392,239. **Hygrometric Apparatus.** C. L. Burdick, London.
392,251. **Transparent Cover.** Transparent Cover Co., Providence, R. I., assignee of S. H. Freedman, Brighton, Mass., both in the U. S. A.
392,256. **Engine Unit Mounting.** Humber, Ltd., Coventry, and L. C. Ord, Nottingham.
392,310. **Tire Pressure Gage.** W. Turner & Bro., Ltd., and W. Turner, both of Sheffield.
392,363. **Multiple-Way Valve.** Seitzwerke Ges., Bad Kreuznach, Germany.
392,418. **Vacuum-Jacketed Vessel.** A. H. Martin, London.
392,450. **Reenforced Paper Edge.** H. Schoening, Berlin, Germany.
392,471. **Table Game.** R. A. Dentith, Shropshire.
392,474. **Metal Battery Case.** Britannia Batteries, Ltd., London, assignee of Accumulatoren-Fabrik A. G., Berlin, Germany.
392,493. **Golf Club.** A. G. Spalding & Bros. (British), Ltd., London, assignee of W. F. Reach, Springfield, Mass., U. S. A.
392,542. **Alloy.** E. A. Valadez, Guadalajara, Mexico.
392,601. **Damping Appliance.** H. W. Harrington, London.
392,627. **Paper Index File.** O. Mandler, Vienna, Austria.
392,722. **Rubber Ring Packing.** W. W. Triggs, London. (Viuda e Hijos de J. Somme, Bilbao, Spain.)
392,776. **Endless Track Vehicle.** A. Kegresse, Courbevoie, France.
392,805. **Fountain Pen.** Inkpak Mfg. Co., Inc., assignee of F. Furedy, both of New York, N. Y., U. S. A.
392,864. **Golf Club.** A. G. Spalding & Bros. (British), Ltd., London, assignee of W. F. Reach, Springfield, Mass., U. S. A.
393,056. **Container Closure.** J. F. Kavli and T. Stokke, both of Stavanger, Norway.
393,179. **Toy Pistol.** E. H. Graff, Dresden, Germany.

Germany

582,422. **Block Belt** (and Process). A. L. Freedlander, Dayton, O., U. S. A. Represented by E. Wesnigk, Berlin.
582,944. **Flexible Valve.** Continental Gummi-Werke A. G., Hannover.

TRADE MARKS

United States

305,052. **Penn-Murray.** Lubricating oil. A. H. Branham, receiver for Murray Rubber Co., Trenton, N. J.
305,053. **Inter-State.** Lubricating oil. A. H. Branham, receiver for Murray Rubber Co., Trenton, N. J.
305,081. **Anotex.** Brassieres. Dunlop Rubber Co., Ltd., Birmingham, England.
305,121. **Anode.** Household gloves. American Anode, Inc., Akron, O.
305,271. **Spencer Moulton.** Balls. George Spencer Moulton & Co., Ltd., London, England.
305,293. **Weldon Roberts Erasers Correct Mistakes in Any Language.** Erasers. Weldon Roberts Rubber Co., Newark, N. J.
305,337. Representation of a label containing the words: **"The Transparent Trojan,"** and **"Super-Sensitive,"** below which appears a diamond containing the words: **"Trojan Brand,"** and below the diamond, the words: **"Prophylactic Rubber Goods."** Prophylactic rubber articles. Youngs Rubber Corp., Inc., New York, N. Y.
305,512. **Carbon-base.** Molded friction linings. Rex-Hide Rubber Mfg. Co., now by change of name Rex-Hide, Inc., E. Brady, Pa.
305,532. **Certex.** Soles. Essex Rubber Co., Trenton, N. J.
305,534. Representation of an arrow running through the word: **"Arrow."** Window cleaner. Greenview Mfg. Co., Chicago, Ill.
305,622. Representation of a coiled snake pierced with a hypodermic needle, and below, the word: **"Koberal."** Medical and surgical appliances, especially atomizers. R. A. Cushman, doing business as Koberal Products Co., Lowell, Mass.
305,710. **Steinweave.** Narrow elastic. A. Stein & Co., Chicago, Ill.

Market Reviews

CRUDE RUBBER

A DEMAND for inflation that grew rapidly in the last part of September lifted rubber prices from the lower levels they had reached before and after the Labor Day holiday. The President countered these demands with a plan of his own for the expenditure of large sums for loans to cotton farmers and for the purchase of food and cotton for the unemployed.

The President frankly stated that he was not satisfied with the rise in commodity prices, and he put forward his plans with the hope and intention of raising these levels. It is apparent that he has no intention at present of using his broad powers for printing currency, but hopes to attain the same ends through his present new plan and the encouragement of easier bank credit for which arrangements are under way.

Statistics showed a good rate of production again in August, but imports are too large to satisfy traders. The only redeeming feature about them is that they strengthen the case for restriction. Nothing definite is expected until the year-end; but the Dutch Minister in the Far East has been voted powers over the export of commodities; and if the British and Dutch can agree on a plan, he will probably use those powers to advantage.

Automobile manufacturers still make a satisfactory showing. Production in August was more than 2½ times last year's rate, and September production is holding up well. Sales have not tapered off as they usually do in this season. The reason is that no new models have been announced, and the feeling is that when they are, prices will rise because of increased costs. The public seems to be buying cars on the assumption that new models will show little change, but prices might be higher.

Tire production is lower, but manufacturers are expected to announce new third and fourth lines which should help sales.

Sales of actuals were meager in the last month. A few manufacturers who feared inflation bought rubber, but the general feeling is that unless restriction or outside conditions change matters, rubber will deviate little from the present market under increasing stocks here and abroad.

RUBBER BULL POINTS

1. **August consumption was 44,939 long tons, against 23,721 last August. For the first 8 months this year it was 279,847 long tons, compared with 244,621 in the 1932 period.**
2. **Stocks on hand in the United States on August 31 were 325,418 long tons, against 326,609 on July 31, and were 5.1% below the August 31, 1932, total.**
3. **London and Liverpool stocks were 96,000 tons on September 15, compared with 103,000 last year.**
4. **Legislation has been approved in the Dutch East Indies empowering the government to restrict commodity movements. British and Dutch growers are reported working for an accord.**
5. **August production of automobiles was 236,480 units against 233,088 in July, and 90,325 in August, 1932. For the first 8 months output was 1,476,678, against 1,070,916 last year.**
6. **September retail sales of automobiles were estimated to be close to the August level.**
7. **July shipments of casings, though 12.8% under June, were 128.7% above July, 1932; production was 6.3% under June, but 58.0% above last July; stocks on hand increased 3.5% and 10.3%, respectively, for the 2 periods.**
8. **For the 8 months to August 31 The Tire & Rim Association reported 6,356,456 rims inspected against 4,676,620 in the same time last year.**

RUBBER BEAR POINTS

1. **August imports of crude rubber were 44,802 long tons, 1.2% over July and 30.9% over August, 1932.**
2. **Crude rubber afloat for the United States on August 31 totaled 53,084 long tons, against 57,435 on July 31, and 42,846 on August 31, 1932.**
3. **Tire production slackened in September, although it is expected to improve in the next month or more.**
4. **Takings by manufacturers have been small owing to the large imports and the delay on restriction.**
5. **With the deflated dollar growers of crude rubber receive about 2¢ less than the present market, which means larger production for a smaller return.**

Week ended September 2. Speculative sales made rubber lose ground last week, but interest on the whole was limited. The professional traders attracted by the recent rise in rubber have largely withdrawn; so for this week, at least, rubber was dull. On Thursday the volume was only 1,370 tons, the smallest in several weeks. Friday, before the 3-day holiday, trading dropped to 770 long tons. News and buyers were scarce. The only signs of activity were from traders evening up for over the holidays. Prices for the week declined from 28 to 29 points, in line with the course of the other markets.

December closed at 7.74¢, against 8.03 the week before; January 7.89 against 8.17; and March 8.17 against 8.45.

The only statistics were from the Department of Commerce, showing July production of 233,088 motor vehicles in the United States, a drop of 20,234 from June, but an increase of 123,945 over July, 1932, and of 14,598 above July, 1931. Production for the first 7 months this year was 1,240,198 units, compared with 980,591 a year ago.

Business in actuals was also dull. Tire makers are slowing down, and inquiry from other sources was limited. Prices lost about ¼¢.

At the close on Friday, September sold at 7$\frac{15}{16}$¢, compared with 7$\frac{13}{16}$¢ the week before; October-December 7⅜ against 7$\frac{5}{16}$; January-March 7$\frac{5}{16}$ against 7$\frac{7}{16}$; and April-June 7⅞ against 8$\frac{1}{16}$.

Week ended September 9. The post-holiday trading was just as dull as the pre-holiday's. The largest day's trading was on Friday when 5,830 tons were sold, the lowest on Tuesday with 1,380 tons. Prices declined for each of the 5 days, ending the week from 72 to 89 points lower.

September was 6.53¢, compared with 7.25¢ the week before; December 6.91 against 7.74; March 7.30 against 8.17; May 7.53 against 8.42; and July 7.80 against 8.62.

Trading figures for rubber futures on the Commodity Exchange showed that 88,650 long tons changed hands during August, compared with 263,090 tons during July. For the 8 months including August, volume was 687,160 long tons, against 179,980 tons in the same period of 1932. At present news is scarce; restriction negotiations having apparently become stalemated. Akron advices indicate that tire activity has passed its peak for the present and will

New York Outside Market—Spot Closing Rubber Prices—Cents per Pound

	August, 1933				September, 1933																	
	28	29	30	31	1	2*	4†	5	6	7	8	9	11	12	13	14	15	16	18	19	20	21	22	23
Ribbed Smoked Sheet.	7¼	7¼	7⅛	7⅛	7⅛	...	...	7	7	6¾	6⅝	6⅝	6¾	6¾	6¾	7	7	7¼	7½	7⅜	7¾	7¼	7⅜	7⅜
No. 1 Thin Latex Crepe	8	8	8	8	8	...	...	7⅞	7⅞	7⅝	7½	7½	7⅜	7⅜	7⅜	7⅞	7⅞	8	8¼	8¼	8¼	8⅛	8¼	8½
No. 1 Thick Latex Crepe	7⅞	7⅞	7⅞	7⅞	7⅞	...	...	7¾	7¾	7½	7⅜	7⅜	7½	7½	7½	7¾	7¾	7⅞	8⅛	8⅛	8⅛	8	8⅛	8⅜
No. 1 Brown Crepe ...	6⅝	6⅝	6	5¾	5¾	...	...	5⅝	5⅝	5⅜	5¼	5¼	5⅜	5⅜	5⅜	5⅝	5⅝	5¾	5⅞	6	6	5¾	5¾	5¾
No. 2 Brown Crepe ...	6	6	5⅞	5⅝	5⅝	...	...	5½	5½	5¼	5⅛	5⅛	5¼	5¼	5¼	5½	5½	5⅝	5¾	5⅞	5⅞	5½	5½	5½
No. 2 Amber	6⅝	6⅝	6	5¾	5¾	...	...	5⅝	5⅝	5⅜	5¼	5¼	5⅜	5⅜	5⅜	5⅝	5⅝	5¾	5⅞	6	6	5¾	5¾	5¾
No. 3 Amber	6	6	5⅞	5⅝	5⅝	...	...	5½	5½	5¼	5⅛	5⅛	5¼	5¼	5¼	5½	5½	5⅝	5¾	5⅞	5⅞	5½	5½	5½
No. 4 Amber	5¾	5¾	5¾	5½	5½	...	...	5⅜	5⅜	5⅛	5	5	5⅛	5⅛	5⅛	5⅜	5¼	5⅜	5½	5⅝	5⅝	5¼	5¼	5¼
Rolled Brown	5¼	5¼	5¼	4¾	4¾	...	...	4¾	4¾	4½	4⅜	4⅜	4½	4½	4½	4¾	4⅝	4¾	4⅞	5	5	4½	4½	4½

*Closed. †Holiday.

probably be dull for the next few weeks when another spurt may be expected.

The Department of Commerce reported the value of automotive products exported in July was $7,756,546, a gain of 7% over June and 15% over July, 1932. The chief buyers were the Union of South Africa, Belgium, and Argentina.

In the Outside Market business was very dull. Prices eased off; the only sales recorded were a few on the breaks. The consensus of opinion seems to be that takings will not be large for the rest of the year unless a sudden development in restriction news reverses the present trend.

September ribbed smoked sheets closed the week at 6 5/16¢, compared with 7 3/16¢ the week before; October-December 6 13/16 against 7 3/16; January-March 7 1/16 against 7 5/16; and April-June 7 1/16 against 7 7/16.

Week ended September 16. Advices on Monday from Batavia, Java, related that an ordinance had been introduced in the legislature there authorizing the government to regulate the restrictions on exports for all commodities. The ordinance was tabled in the Volksraad, but it was regarded as a preliminary step to ultimate action on the control of crude rubber exports. Under this news the market advanced, but lost ground again the next day. Talk of inflation recurred and helped reverse sentiment of last week and, incidentally, recover most of the losses. Gains this week were from 72 to 79 points over the week before.

September closed at 7.30¢, compared with 6.53¢ the week before; December 7.63 against 6.91; January 7.78 against 7.00; March 8.04 against 7.30; May 8.32 against 7.53; and July 8.57 against 7.80.

The August consumption report, received late in the Saturday session, was in line with expectations. United States consumption was 44,939 long tons, against 50,184 in July and 23,721 for August, 1932. It was a decline from July this year of 10.5% and a gain of 89.4% over last August. For the first 8 months of 1933 consumption was 279,847 long tons, compared with 244,621 for the same 1932 period.

Imports in August were 44,802 tons, 1.2% higher than in July and 30.9% higher than in August, 1932. Domestic stocks on August 31 totaled 325,418 tons, against 326,609 on July 31 and 5.1% less than August 31, 1932, stocks.

Crude rubber afloat to the United States at the month-end was 53,084 long tons, against 57,435 on July 31 and 42,846 on August 31, 1932.

Reports from the automobile industry are decidedly encouraging. Sales for September are reported holding up well, and estimates put production for the month at 180,000 to 200,000 units, compared with output in September, 1932, of 86,500 units.

Tire production has declined in the last few weeks, and one of the large tire companies is back on a 4-day basis after working 5 and 6 days. That business has improved in tires is indicated by figures given out by The Tire & Rim Association. In August 960,795 tire rims were inspected, compared with 233,033 in August, 1932, and for the first 8 months the comparison is 6,356,456 rims against 4,676,620 in the same period a year ago.

Prices in actuals were firm for the week, with quotations back at the same level that prevailed 2 weeks ago. Factories bought on a small scale, principally as a result of the inflation talk that had some buyers buying for protection. As the rumors died down, purchases dropped accordingly.

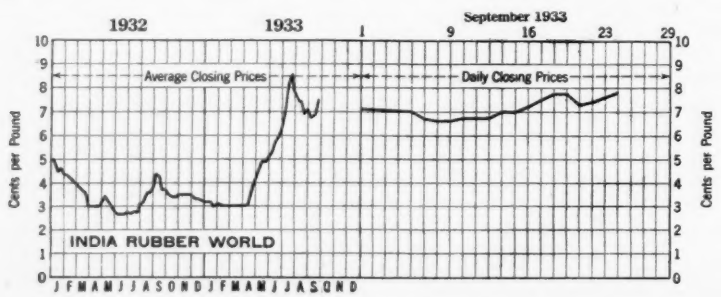
Spot ribbed smoked sheets were quoted at 7¼¢, compared with 6 5/8¢ last week; October-December 7⅜ against 6 13/16; January-March 7 5/8 against 7 1/16; and April-June 7⅞ against 7 7/16.

Week ended September 23. Rubber prices were lifted considerably early in the week with volume on Tuesday amounting to 7,610 tons and on Wednesday, 8,360 tons. The pace quieted in the latter part of the week, with profit taking erasing some of the losses, but with quotations showing substantial gains of 57 to 64 points for the week. Agitation for inflation prompted the rise, and further restriction news strengthened the advance before the reaction set in. From Thursday to Saturday news was lacking, and prices followed those of the other commodity markets, principally cotton, where the President's plans for loans on cotton at 10¢ and for a fund to buy cotton to clothe the unemployed raised prices.

The October position closed at 8.00¢, compared with 7.42¢ the week before; December 8.20 against 7.63; January 8.38 against 7.78; March 8.68 against 8.04; May 8.96 against 8.32; and July 9.10 against 8.57.

A newspaper in Batavia, Java, reported that Dutch growers there hope for a restriction plan of 50% of the 1934 production with a percentage for future years fixed by a commission. The Dutch East Indian Government, the newspaper added, would like to restrict native production by levying an ad valorem duty on exports and prohibiting planting for the 5 years the plan would run. A British committee was formed to meet with the Dutch and the British Governments to discuss the plan, said a cable from London; and at its meeting the British Rubber Growers' Association again went on record in favor of restriction.

(*Continued on page 68*)



New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets

New York Quotations

New York outside market rubber quotations in cents per pound

	Sept. 26, 1932	Aug. 26, 1933	Sept. 26, 1933
Plantations			
Rubber latex....*gal.*	51	72	72
Sheet			
Ribbed, smoked, spot	3 1/8/4	7 1/8	7 3/8/7 7/16
Oct.-Dec.	4	7 7/16/7 3/8	7 1/2/7 9/16
Jan.-Mar.	4 1/8	7 7/16/7 1/2	7 3/4
Apr.-June	4 1/4/4 5/16	7 7/8/8	8
Crepe			
No. 1 thin latex, spot	4 1/2	7 15/16/8 1/16	8 1/16/8 1/4
Oct.-Dec.	4 1/2/4 9/16	8 /8 1/16	8 1/4/8 3/8
Jan.-Mar.	4 5/8/4 11/16	8 1/16/8 1/2	8 1/2/8 5/8
Apr.-June	4 3/4/4 7/8	8 1/16/8 1/8	8 3/4/8 7/8
No. 3 Amber, spot.	3 5/8	6 /6 1/16	5 1/2
No. 1 Brown	3 5/8/3 3/4	6 1/16/6 1/8	5 5/8
Brown, rolled	3 1/16/3 1/4	5 1/16/5 1/16	4 3/8/4 1/2
Paras			
Upriver fine	7 3/4	9 1/4	8 3/4
Upriver fine	*10 1/2	*12 3/4	*11 3/4
Upriver coarse	†4	..	..
Upriver coarse	*5 1/2	*9 1/2	*10
Islands fine	†6 3/4	9	..
Islands fine	*10	*12 1/2	*11 3/4
Acre, Bolivian fine.	7 1/2	10	9
Acre, Bolivian fine.	*11	*13	*12
Beni, Bolivian	7 3/8	10	9
Madeira fine	7 3/4	9 1/2	8 3/4
Pontianak			
Bandjermasin	5	6	7 1/2
Pressed block	6 3/4	13	12
Sarawak	5	6	7 1/2
Caucho			
Upper ball	†4	..	..
Upper ball	*5 1/2	*9 1/2	*10
Lower ball	†3 1/2	..	..
Manicobas			
Manicoba, 30% guar.	†2 1/4	†5	†3 1/4
Mangabiera, thin sheet	†2 1/2	..	..
Guayule			
Duro, washed and dried	12	12	12
Ampar	13	13	13
Africans			
Rio Nuñez	†9 3/4	11	11
Black Kassai	†7 1/2	10 1/2	9
Manihot cuttings	†3	5 1/4	..
Prime Niger flake	15	17 1/2	20
Gutta Percha			
Gutta Siak	6 1/4	13	13
Gutta Soh	13	15	15
Red Macassar	1.50	1.50	1.50
Balata			
Block, Ciudad Bolivar	16	28	30
Manaos block	18	29	30
Surinam sheets	28	39	40
Amber	30	42	42

*Washed and dried crepe. Shipments from Brazil. †Nominal.

RUBBER SCRAP

SCRAP rubber prices for the first time in several months were unchanged from the previous month. The market was steady all month, and business was only slightly less than that in August despite the seasonal factors at work.

The present slight lull from the high rate in July and August is largely due to hesitation on the part of those reclaimers who have not yet organized themselves under the new working conditions incident to the application of the NRA codes. In the next month or so scrap dealers expect that takings will improve and consumption by reclaimers show a steady advance.

BOOTS AND SHOES. Business in this grade of scrap is characterized as "very firm." Shoes and rubber footwear are now being manufactured for the winter trade; and while the demand this summer was excellent, even normal winter business should carry this showing further.

TIRES AND TUBES. An announcement is shortly expected from large tire manufacturers of the introduction of third- and fourth-line tires, which will increase the consumption of scrap considerably. Actual output of finished tires has decreased, but scrap takings have not declined, probably because manufacturers are building up the new lines still to be announced. Reclaimers have taken a good amount of tire scrap, and the export demand has shown no change from the good demand which has prevailed for the past several months.

MECHANICALS. Manufacturers making reclaim for mechanical goods have been building up their supplies in expectation of better fall and winter business, and last month's gain in prices for scrap was held.

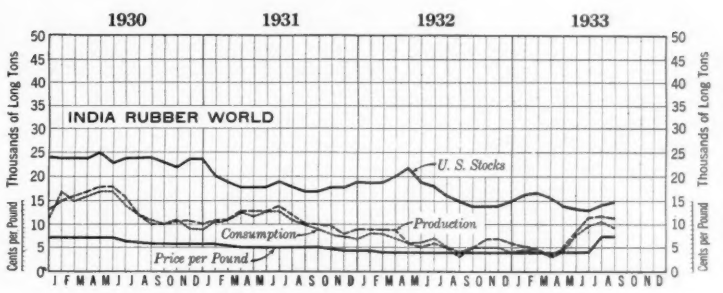
HARD RUBBER. The opening of the radio show this month, with predictions of large campaigns, bolstered the outlook in hard rubber scrap. Radios, like automobiles, have a large backlog which sales managers expect to uncover in the next few months if the present stimuli to business are at all effective.

CONSUMERS' BUYING PRICES
(Carload Lots Delivered Eastern Mills)

September 26, 1933

		Prices
Boots and Shoes		
Boots and shoes, black	lb.	$0.01¼/$0.01½
Colored	lb.	.01 / .01¼
Untrimmed arctics	lb.	.01 / .01¼
Inner Tubes		
No. 1, floating	lb.	.05¼/ .05½
No. 2, compound	lb.	.02¾/ .02⅞
Red	lb.	.02¾/ .02⅞
Mixed tubes	lb.	.02½/ .02¾
Tires (Akron District)		
Pneumatic Standard		
Mixed auto tires with beads	ton	11.00 /11.50
Beadless	ton	16.00 /16.50
Auto tire carcass	ton	12.00 /13.00
Black auto peelings	ton	18.50 /19.50
Solid		
Clean mixed truck	ton	30.00 /33.00
Light gravity	ton	40.00 /42.00
Mechanicals		
Mixed black scrap	lb.	.01 / .01¼
Hose, air brake	ton	10.00 /11.00
Garden, rubber covered	ton	9.00 /10.00
Steam and water, soft	ton	9.00 /10.00
No. 1 red	lb.	.01½/ .01¾
No. 2 red	lb.	.01 / .01¼
White druggists' sundries	lb.	.01¾/ .01⅞
Mechanical	lb.	.01¼/ .01½
Hard Rubber		
No. 1 hard rubber	lb.	.07¾/ .08

RECLAIMED RUBBER


1930
1931
1932
1933
INDIA RUBBER WORLD
Thousands of Long Tons
Cents per Pound
U. S. Stocks
Consumption
Production
Price per Pound
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D

Production, Consumption, Stocks, and Price of Tire Reclaim

United States Reclaimed Rubber Statistics—Long Tons

Year	Production	Consumption	Consumption Per Cent to Crude	United States Stocks*	Exports
1930	157,967	153,497	41.5	24,008	9,468
1931	132,462	125,001	35.7	19,257	6,971
1932	75,656	77,500	23.3	21,714	3,536
1933					
January	5,301	4,811	21.0	16,262	130
February	4,578	4,363	20.2	16,570	178
March	3,847	3,454	19.1	15,496	353
April	4,617	4,407	16.8	14,370	165
May	8,366	7,770	17.4	13,734	319
June	10,591	9,674	18.8	13,231	223
July	12,049	10,327	20.6	14,108	507
August	11,708	9,446	21.0	15,037	353

* Stocks on hand the last of the month or year.
Compiled by The Rubber Manufacturers Association, Inc.

MANUFACTURERS of reclaim in September maintained a level of business only slightly below that of the previous month. The NRA code still causes some confusion in the industry and will until adjustments are made to the new conditions and prices are definitely determined in the light of the new costs.

On a recent visit to New England factories a trader reported operations on a healthy basis, with optimism over the future. The various classes of reclaim such as insulated wire, boots and shoes, and mechanicals were running at good rates, with only tires and tubes slowing down. The lull in this latter grade is expected and will probably pick up again after the middle of October.

Consumption of reclaim in comparison with crude made a good showing during August. Crude consumption declined 10.4% from July, reclaim 8.5%. The ratio of reclaim to crude rose from 20.6% to 21.0% in August, which is equal to the level of last January. In August, 1932, the ratio was 19.6%, but the actual figures give a different picture. August, 1932, consumption was 4,382 tons, compared with 9,446 in August, 1933. Production was 3,264 against 11,708. Crude figures for a year ago showed imports of 34,249 tons, compared with 44,802 last month, and consumption of 22,372 tons against 44,939. So even though the ratio shows a slight improvement, the volume of business is more than doubled.

The recent talk of inflation and the general belief that restriction will be effected some time before the year-end are responsible in some degree for the feeling of manufacturers. At present prices, and with the dollar off the gold standard, Dutch traders actually receive about 2¢ under the prices quoted here, which with the high imports bodes well for restriction.

Most prices were adjusted fractionally lower to meet the reductions in raw materials last month.

New York Quotations

September 26, 1933

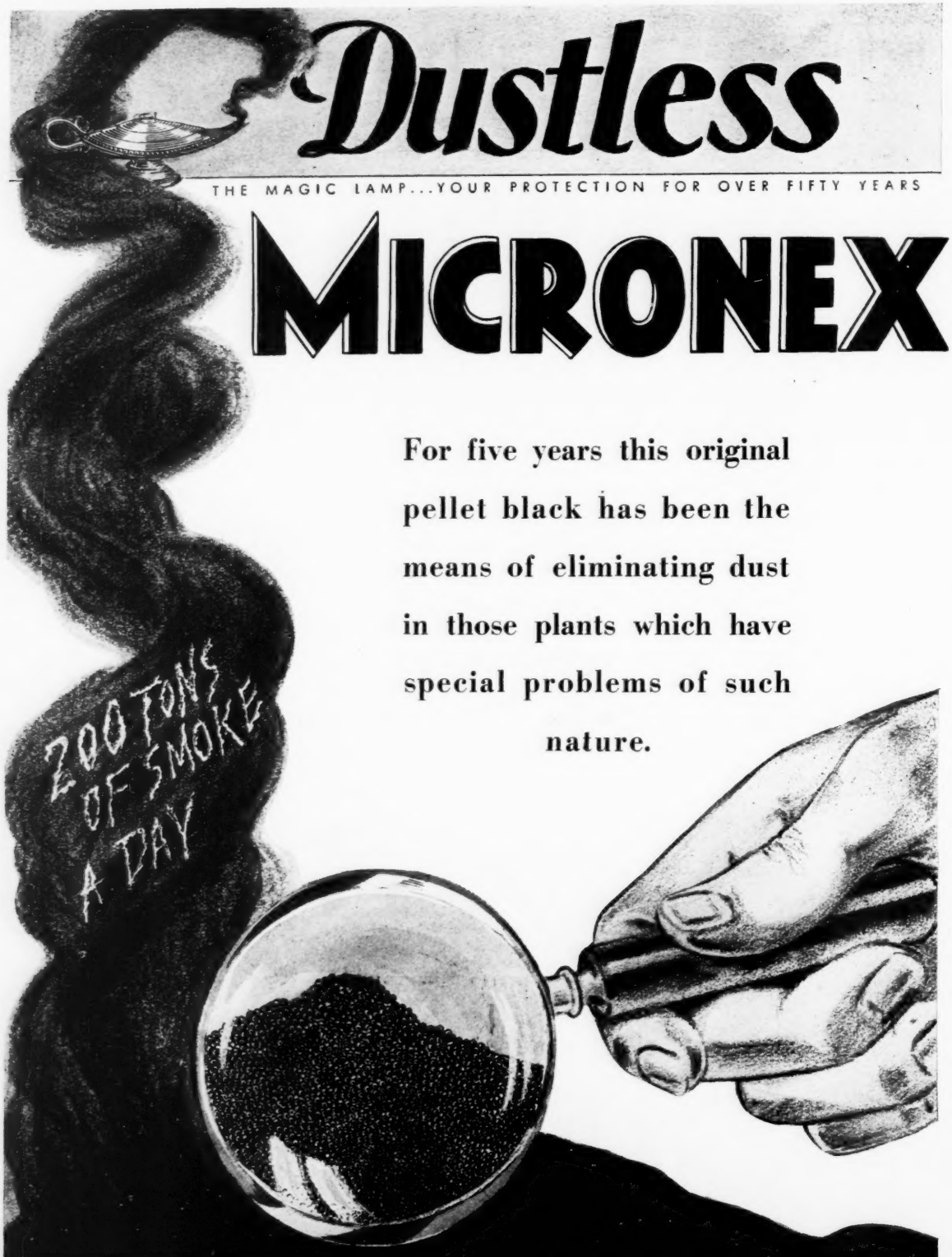
	Spec. Grav.	Cents per Lb.
High Tensile		
Super-reclaim, black	1.20	7 /7¼
red	1.20	6½/6¾
Auto Tire		
Black	1.21	4¾/5
Black selected tires	1.18	5 /5¼
Dark gray	1.35	5¾/6
White	1.40	7 /7¼
Shoe		
Unwashed	1.60	6½/6¾
Washed	1.50	8 /9
Tube		
No. 1	1.00	11 /
No. 2	1.10	6¼/6½
Truck Tire		
Truck tire, heavy gravity	1.55	5¾/6
Truck tire, light gravity	1.40	6 /6¼
Miscellaneous		
Mechanical blends	1.60	4 /4¼

Dustless

THE MAGIC LAMP...YOUR PROTECTION FOR OVER FIFTY YEARS

MICRONEX

For five years this original pellet black has been the means of eliminating dust in those plants which have special problems of such nature.



BINNEY & SMITH CO.

ORIGINAL PATENTEES

41 EAST 42nd STREET. NEW YORK. N. Y.

COMPOUNDING INGREDIENTS

THE demand for compounding materials in general declined somewhat in September owing to decreased rate of tire production from the levels of July and August. The output of rubber footwear, heels, and soles is gaining in volume; while that of mechanical rubber goods has moderated to a slower pace. Contracts for rubber compounding pigments are not being made at present because of prevailing confusion regarding the course of prices.

ACCELERATORS. Price changes on accelerators and antioxidants are not likely to take place before January 1, 1934. Then labor and material costs will undoubtedly be somewhat higher, making it difficult to avoid rising prices in some instances. The increase in business during the past 3 months has been very much more acceptable than increase in prices would have been.

CARBON BLACK. The demand from tire manufacturers declined somewhat in September, and prices were unchanged. Contracts will be solicited in October on material for 1934 consumption.

FACTICE. The demand slowed up recently; but the market has a steady tone, and prices are unchanged.

GREEN CHROMIUM. The market situation on this pigment remains the same, with requirements very slight on the part of rubber goods manufacturers.

LITHARGE. The price of the commercial grade has held firm and unchanged at 7¢ since July 10. Demand shows some improvement. It is, however, spotty.

LITHOPONE. Prices continue without change, and demand is unsteady.

MINERAL RUBBER. The market is firm. Prices have not yet been established on next year's business.

RUBBER SOLVENTS. Consuming demand was well maintained to the middle of September when it eased up. Prices advanced twice during the month on both light and heavy grades. The first was ½¢ and the second ¾¢ a gallon, bringing the prices at Group 3 refineries to 6¼¢ a gallon. This is the highest price thus far this year.

TITANIUM PIGMENTS. Sales are reported fairly good and improving. Deliveries are light, and prices firm.

New York Quotations

September 26, 1933

Prices Not Reported Will Be Supplied on Application

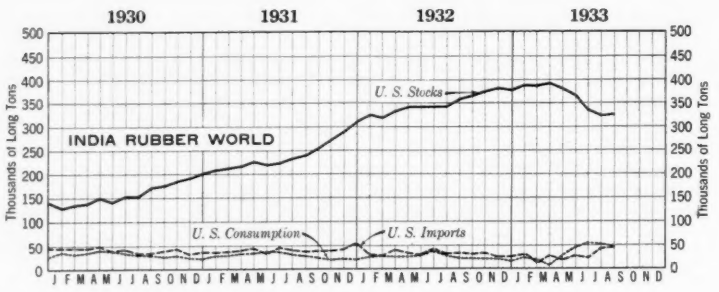
Abrasives			
Pumicestone, pwd.	lb.	$0.02½	/$0.04
Rottenstone, domestic	ton	23.50	/28.00
Accelerators, Inorganic			
Lime, hydrated	ton	20.00	
Litharge (commercial)	lb.	.07	
Magnesia, calcined, heavy	lb.	.04	/ .04½
carbonate	lb.	.06	/ .06¼
Accelerators, Organic			
A-1 (Thiocarbanilid)	lb.		
A-5-10	lb.		
A-7	lb.		
A-11	lb.		
A-16	lb.		
A-19	lb.		
A-32	lb.		
Accelerator 49	lb.	.39	/ .49
Aldehyde ammonia	lb.	.65	/ .70
Altax	lb.		
Anhydroformaldehyde-para-toluidine	lb.		
Barak	lb.		
Butene	lb.		
Captax	lb.		
Crylene	lb.		
paste	lb.		
DBA	lb.		
Di-esterex N.	lb.		
DOTG	lb.	.42	/ .52
DPG	lb.	.34	/ .44
du Pont 808	lb.		
833	lb.		
Ethylidine aniline	lb.		
Formaldehyde aniline	lb.	.37½	/ .40
Guantal	lb.		
Heptene	lb.		
base	lb.		
Hexamethylenetetramine	lb.	.37	
Lead oleate, No. 999	lb.	.11	
Witco	lb.	.11	
Lithex	lb.		
Monex	lb.		
Novex	lb.		
Pipsol X	lb.		
Plastone	lb.		
R-2	lb.		
base	lb.		
R & H 40	lb.		
50-D	lb.		
Safex	lb.		
Super-sulphur No. 1	lb.		
No. 2	lb.		
Tetrone A	lb.		
Thio	lb.		
Thiocarbanilid	lb.	.20	
Thionex	lb.		
Trimene	lb.		
base	lb.		
Triphenyl guanidine	lb.	.58	/ .60
Tuads	lb.		
Ureka	lb.		
C	lb.		
Vulcanex	lb.		
Vulcanol	lb.		
Vulcone	lb.		
ZBX	lb.		
Z-88-P	lb.		
Zimate	lb.		
Acids			
Acetic 28% (bbls.)	100 lbs.	$2.91	/$3.16
glacial (carboys)	100 lbs.	10.52	/10.77
Sulphuric, 66°	ton	15.50	
Age Resisters			
Age-Rite Gel	lb.		
powder	lb.		
resin	lb.		
white	lb.		
Albasan	lb.		
Antox	lb.		
BLE	lb.		
Flectol A	lb.		
B	lb.		
Neozone	lb.		
Oxynone	lb.		
Parazone	lb.		
Permalux	lb.		
Resistox	lb.		
VGB	lb.		
Zalba	lb.		
Antiscorch Material			
UTB	lb.		
Antisun Materials			
Heliozone	lb.		
Sunproof	lb.		
Binders, Fibrous			
Cotton flock, dark	lb.	.09	/ .11½
dyed	lb.	.50	/ .80
white	lb.	.11½	/ .15
Rayon flock, colored	lb.	1.60	/ 1.75
white	lb.	1.40	
Colors			
BLACK			
Bone, powdered	lb.	.05½	/ .15
Drop	lb.	.05½	/ .17
Lampblack (commercial)	lb.	.08	/ .12
BLUE			
Prussian	lb.	.35	/ .37
Toners	lb.	.80	/ 3.50
Ultramarine	lb.	.07	/ .10
BROWN			
Mapico	lb	.13	
Sienna, Italian, raw, pwd.	lb.	.04½	/ .11
GREEN			
Chrome, light	lb.	.23	/ .25½
medium	lb.	.26	/ .27½
oxide	lb.	.19	/ .21
Guignet's (bbls.) f.o.b. Easton	lb.	.70	
Toners	lb.	.85	/ 3.50
ORANGE			
Toners	lb.	.40	/ 1.60
ORCHID			
Toners	lb.	1.50	/ 2.00
PINK			
Toners	lb.	1.50	/ 4.00
PURPLE			
Toners	lb.	.60	/ 2.00
RED			
Antimony			
Crimson, R. M. P. No. 3	lb.	$0.46	
Sulphur free	lb.	.48	
7-A	lb.	.33	
Z-2	lb.	.20	
Iron Oxides			
Rub-er-red (bbls.) f.o.b. Easton	lb.	.08¾	
Mapico	lb.	.08¾	
Toners	lb.	.80	/$2.00
WHITE			
Lithopone (bags)	lb.	.04½	/ .04¾
Albalith	lb.	.04½	/ .04¾
Cryptone No. 19	lb.	.06	/ .06¼
CB No. 21	lb.	.06	/ .06¼
Titanium oxide, pure	lb.	.17	/ .18¾
Titanox "B"	lb.	.06	/ .06½
"C"	lb.	.06	/ .06½
Zinc Oxide			
Black label (lead free)	lb.	.05¾	
F. P. Florence, green seal	lb.	.09⅝	/ .09⅞
red seal	lb.	.08⅝	/ .08⅞
white seal (bbls.)	lb.	.10⅞	
Green label (lead free)	lb.	.05¾	
seal, Anaconda	lb.	.09⅝	/ .10⅛
Horsehead (lead free) brand			
Selected	lb.	.05¾	/ .06
Special	lb.	.05¾	/ .06
XX	lb.	.05¾	/ .06
red	lb.	.05¾	/ .06
Kadox, black label	lb.	.09⅝	/ .09⅞
blue label	lb.	.08⅝	/ .08⅞
red label	lb.	.07⅛	/ .07½
Lehigh (leaded)	lb.	.0490	/ .0515
Red label (lead free)	lb.	.05¾	
seal, Anaconda	lb.	.08⅝	/ .09⅛
Standard (leaded)	lb.	.05½	/ .05¾
Sterling (leaded)	lb.	.05½	/ .05¾
Superior (leaded)	lb.	.05½	/ .05¾
U. S. P. (bbls.)	lb.	.12¾	
White seal, Anaconda	lb.	.10⅞	/ .11⅞
XX zinc sulphide (bbls.)	lb.	.13	
YELLOW			
Chrome	lb.	.15	
Mapico	lb.	.09½	
Ochre, domestic	lb.	.01⅜	/ .02⅝
Toners	lb.	2.50	
Factice—See Rubber Substitutes			
Fillers, Inert			
Asbestine	ton	14.00	
Barytes (f.o.b. St. Louis)	ton	23.00	
off color	ton		
white	ton		
Blanc fixe, dry, precip.	ton	70.00	/75.00
pulp	ton	42.50	/45.00
Infusorial earth	lb.	.03	
Kalite No. 1	ton		
No. 3	ton		
Suprex, heavy	ton	45.00	/55.00
white, extra light	ton	60.00	/80.00
Whiting			
Chalk, precipitated	lb.		
Domestic	ton		
Hakuenka	lb.		

Paris white, English cliff-stone	100 lbs.	
Sussex	ton	
Witco	ton	$20.00
Fillers for Pliability		
Flex	lb.	
Fumonex	lb.	.03 /$0.08
P-33	lb.	
Thermax	lb.	
Velvetex	lb.	.02 / .06
Finishes		
IVCO lacquer, clear	gal.	2.50 / 3.00
colors	gal.	2.60 / 3.25
Mica, amber	lb.	.05
Rubber lacquer No. 106	gal.	3.00
Starch, corn, pwd.	100 lbs.	2.84 / 2.95
potato	lb.	.05¼/ .06
Talc, dusting	ton	
Pyrax A	ton	
Latex Compounding Ingredients		
Accelerator 552	lb.	
Aquarex	lb.	
Aresco	lb.	
Catalpo	ton	
Colloidal color pastes	lb.	
sulphur	lb.	
zinc oxide	lb.	
Disinfectants	lb.	
Dispersaid	lb.	1.50
Dispersed Antox	lb.	
Emulsified Heliozone	lb.	
Neozone L	lb.	
Tepidone	lb.	
Mineral Rubber		
Genasco (fact'y)	ton	30.00 /32.00
Gilsonite (fact'y)	ton	37.34 /39.65
Granulated M. R.	ton	
Hydrocarbon, granulated	ton	40.00 /42.00
hard	ton	
Parmr Grade 1	ton	23.00 /28.00
Grade 2	ton	23.00 /28.00
Mold Lubricants		
Rusco mold paste	lb.	
Sericite	ton	
Soapbark (cut)	lb.	.07 / .08
Soapstone	ton	15.00
Oils		
Castor, blown	lb.	.12¼/ .12¾
Poppy seed	gal.	1.55 / 1.60
Red, distilled (bbls.)	lb.	.07 / .07⅝
Protective Colloid		
Casein, domestic	lb.	.14 / .14½
Reenforcers		
Carbon Black		
Aerfloted arrow black	lb.	.02¾
Arrow specification black	lb.	.03
Century (La., c. l.)	lb.	.0272
Certified, Cabot, c. l., f. o. b. works, bags	lb.	.02¾
c. l., f. o. b. works, cases	lb.	.04¼
l. c. l., f. o. b. works	lb.	.05¼/ .07
Spheron (Dense Dustless Black) c. l., f. o. b. works	lb.	.02¾
Disperso (La., c. l.)	lb.	.0272
Dixie brand	lb.	.0272/ .06½
Kosmos brand	lb.	.0272/ .06½
Micronex	lb.	.03 / .08
Ordinary (compressed or uncompressed)	lb.	.02¾/ .07
Clays		
Blue Ridge, dark	ton	
China	ton	6.00 /20.00
Dixie	ton	
Langford	ton	
Par	ton	
Perfection	ton	6.00 /20.00
Standard	ton	5.50
Suprex No. 1	ton	8.00
No. 2, dark	ton	6.50
Glue, high grade	lb.	.22 / .27
Reodorants		
Amora A	lb.	
B	lb.	
C	lb.	
D	lb.	
Para-Dors	lb.	
Rodo	lb.	
Rubber Substitutes or Factice		
Amberex	lb.	.13¾
Black	lb.	.06 / .08
Brown	lb.	.07 / .11
White	lb.	.07½/ .13
Softeners		
Burgundy pitch	lb.	.05
Cycline oil	gal.	
Fluxol	ton	
Hardwood pitch, c.l.	ton	24.00 25.00
Palm oil (Witco)	lb.	.07
Petrolatum, light amber	lb.	.02⅜/ .02¾
Pine tar	gal.	.25
Plastogen	lb.	
Rosin oil, compounded	gal.	.30
Rubtack	lb.	.10
Tackol	lb.	
Tonox	lb.	
Witco Flux	gal.	$0.20
Solvents		
Benzol (90% drums)	gal.	.27
Bondogen	gal.	
Carbon bisulphide (drums)	lb.	.05½/ .12
tetrachloride	lb.	.05¼/ .06
Turpentine, steam distilled	gal.	.46 / .47
Stabilizers for Cure		
Laurex, ton lots	lb.	
Stearex B	lb.	.08 / .12
flake	lb.	.07½/ .11
Stearic acid, dbl. pres'd.	lb.	.09 / .15
Zinc stearate	lb.	
Vulcanizing Ingredients		
Sulphur		
Chloride, drums	lb.	.03½/ .04
Flowers, extrafine refined, U.S.P.	100 lbs.	
Rubber	100 lbs.	1.85 / 2.45
Telloy	lb.	
Vandex	lb.	

(See also Colors—Antimony)

Rubbercraft Corp. of Calif., Ltd., with factory at 220th St. and Border Ave., Torrance, and principal office at 110 E. 17th St., Los Angeles, both in Calif., lists as its officers Charles N. Merralls, president; J. Ed. Myers, vice president; T. M. Marshall, secretary; and Roy R. Musser, treasurer. The company manufactures Oso-Soft pneumatic air cushions and mattresses; Oso-Sure bath mats; No-Mar telephone rings, desk guards, and chair rests; Hy-Balls; Flora-A-Dora floor mats; Pix-M-Ez coin mats; Pro-Tek-A-Tube; lamp tubing; Saf-Tee-Tips; and Ball-For-All.

IMPORTS, CONSUMPTION, AND STOCKS


1930
1931
1932
1933
Thousands of Long Tons
INDIA RUBBER WORLD
U. S. Stocks
U. S. Consumption
U. S. Imports
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D

United States Stocks, Imports, and Consumption

United States and World Statistics of Rubber Imports, Exports, Consumption, and Stocks

Twelve Months	U. S. Net Imports* Tons	U. S. Consumption Tons	U. S. Stocks on Hand† Tons	U. S. Stocks Afloat† Tons	United Kingdom Stocks†‡ Tons	Singapore and Penang, Etc., Stocks†‡ Tons	World Production (Net Exports)‡ Tons	World Consumption Estimated‡ Tons	World Stocks†‡§ Tons
1930	488,343	375,980	200,998	56,035	118,297	45,179	821,815	684,993	366,034
1931	495,163	348,986	322,825	40,455	127,103	55,458	797,441	668,660	**495,724**
1932	400,787	322,000	379,000	38,360	92,567	36,802	709,860	670,250	518,187
1933									
January	31,110	22,906	385,811	32,539	89,050	35,746	63,951	52,120	521,173
February	18,875	21,638	381,794	32,898	90,172	34,354	56,056	54,900	518,166
March	27,879	18,047	390,135	29,531	94,565	34,089	61,932	59,100	518,812
April	19,459	26,226	382,167	30,745	95,066	33,520	57,180	61,300	510,753
May	27,556	44,580	364,623	43,342	98,538	37,876	67,050	76,840	501,037
June	22,729	51,326	333,954	63,608	102,451	46,412	62,330	74,110	482,817
July	44,290	50,184	326,609	57,435	99,859	53,179	74,078	76,200	479,646
August	44,802	44,939	325,418	53,084	.....	.....	.....	.....	.....

*Including liquid latex, but not guayule. †Stocks on hand the last of the month or year. ‡W. H. Rickinson & Son's figures. §Stocks at the 3 main centers, U. S. A., U. K., Singapore and Penang.

CONSUMPTION of crude rubber by manufacturers in the United States for August, 1933, totaled 44,939 long tons, against 50,184 long tons for July, a decrease of 10.5% under July, but 89.4% over August, 1932, according to The Rubber Manufacturers Association, Inc. Consumption for August, 1932, was 23,721 long tons. Consumption for the first 8 months of 1933 amounted to 279,847 long tons as compared with 244,621 long tons for the same period in 1932.

Crude rubber imports for August were 44,802 long tons, an increase of 1.2% over July and 30.9% over August, 1932.

The estimated total domestic stocks of crude rubber on hand August 31 were 325,418 long tons, compared with July 31 stocks of 326,609 long tons. August stocks show practically no change as compared with those of July, but are 5.1% below stocks of August 31, 1932.

Crude rubber afloat for the United States ports on August 31 totaled 53,084 long tons compared with 57,435 long tons on July 31 and 42,846 long tons on August 31, 1932.

London and Liverpool Stocks

Week Ended	Tons	
	London	Liverpool
Sept. 2	39,472	57,266
Sept. 9	39,257	57,213
Sept. 16	39,191	56,826
Sept. 23	39,292	56,625

COTTON AND FABRICS

FOR the first few days in September the market marked time until the second government crop report was released. When it revealed an estimate 100,000 bales higher than the month before, the market had a setback.

After selling off more than 1¢ a pound the trend reversed, and at the close of the month practically all losses were recovered. The change in sentiment was due first to a spirit in sales of cotton cloth, then to growing pressure for inflation.

The inflation movement was stopped by the President's plan to loan 10¢ a pound on cotton of this year's crop to farmers who would agree to a 40% reduction in acreage next year, and one of 25% in 1935. Growers are more favorably inclined toward another crop reduction plan next year because of the large crop this year despite the retirement of 10,000,000 acres for production. The incentive has now been furnished to those farmers who need ready cash.

Another plan put forth was for the immediate expenditure of $75,000,000 to purchase food and cotton to be made into cloth by the Red Cross and other agencies to be distributed to the unemployed. This action would not only relieve the surplus, but also help those out of work.

Other proposals which lighten the cotton outlook are negotiations reported under way for extension of credit to Soviet Russia to buy our cotton and reports that the French may take large quantities from us if the proper credits can be arranged.

The inflation demands grew from the fact that farmers were dissatisfied because the price of cotton had not risen to meet their expectations. One movement was under way to petition the President to peg the price of cotton at 15¢, the other at 20¢. With the plan put forward in place of these proposals it is estimated that $400,000,000 could be put in the hands of farmers, which should aid materially in raising prices.

Thus the "vicious illusion" of inflation seems to have been eluded for the present and another experiment entered into which will probably show results, or lack of them, in the next few months.

Week ended September 2. The second government crop report expected next week gave pause to traders and speculators with the result that prices reacted to small sales and to the other commodity and stock markets, with the volume very small. The weather reports vary. From the northern part of the Belt increased weevil activity seems to have affected the crop, but in the West and the South rainy weather after a long dry spell has improved the crop. The decision of the government to buy gold mined in the United States at world prices encouraged all markets, but the gains were lost in cotton. Week-end quotations were from 29 to 35 points lower than last week's. The Exchange was closed Saturday for a 3-day holiday.

COTTON BULL POINTS

1. **The President has offered a plan to loan farmers 10¢ a pound on this year's crop upon agreement to 40% reduction of 1934 acreage and 25% in 1935 plantings.**
2. **$75,000,000 will be used to purchase cotton and food to clothe and feed the unemployed.**
3. **The above plans were designed to stop demands of cotton planters for inflation of the dollar.**
4. **Consumption in August was 588,570 bales of cotton, compared with 404,497 last August. For the 12 months ended July, consumption was 6,135,525 bales, against 4,866,016 the preceding season.**
5. **Cotton on hand in consuming establishments and warehouses on August 31 totaled 945,476 bales, against 7,657,160 a year ago.**
6. **Forwardings to world mills so far this season were 1,814,000 bales, against 1,612,000 in the same time last year, and 1,433,000, 2 years ago.**
7. **Exports are 1,056,000 bales for the present season to date, against 915,000 last year.**
8. **Both French and Russian interests are reported negotiating for the purchase of large quantities of cotton. The Japanese may switch to American cotton if the Indian boycott is not lifted.**
9. **The revised figures of the New York Cotton Exchange put consumption for last season at 14,405,000 bales, and carryover at 11,736,000 bales.**

COTTON BEAR POINTS

1. **The 1933 crop was put at 12,414,000 bales by the Department of Agriculture in its report of conditions on September 1, or 100,000 bales above the August 1 forecast.**
2. **Foreign crops are expected to be higher this year than last.**
3. **The increased estimate of the 1933 crop adversely affected cotton cloth sales.**
4. **Ginnings to September 16 were 3,100,701 running bales, against 2,645,574 a year ago.**
5. **The processing tax aroused a widespread demand for its repeal, which was only offset by the President's plans for loans and purchase of the crop.**

WEEKLY AVERAGE PRICES OF MIDDLING COTTON

Week Ended	Cents per Pound
Sept. 2	9.55
Sept. 9	9.09
Sept. 16	9.38
Sept. 23	10.04

Two private estimates were received during the week—one for 12,600,000 bales, the other for 13,000,000 bales—compared with the last government report of 12,300,000 bales. Plowing under of the crop leased to the Department of Agriculture has proceeded rapidly, but the improved western crop may increase the total yield.

Plans are proceeding for curtailment of next year's crop, with a meeting called for September 5 by Secretary Wallace. An effort will be made to limit planting to 25,000,000 acres, with each grower guaranteed a parity price on half his last 5 years' production. Whether a consumers' tax will be continued will be determined after hearings on the present tax.

October closed at 9.35¢, compared with 9.67¢ last week; December 9.54 against 9.88; January 9.64 against 9.99; March 9.81 against 10.14; May 9.98 against 10.30; and July 10.15 against 10.46.

The New York Cotton Exchange Service reported that world consumption of American cotton last year was 43.7% of the total, compared with 42.8% the previous season, and 35.3% 2 seasons ago. The conference in London between Japanese and British spinners regarding competition and the Indian boycott may result in further increases in sales of American goods. The Japanese state that if the Indian boycott is not raised, they will be forced to buy approximately 1,500,000 bales from other countries, principally the United States.

Our own spinners have struck a slump as far as sales and production go. For the first time in 5 months mills took less cotton last week than in the preceding year. The figures were 57,000 against 70,000 for takings last week.

Week ended September 9. The government's second cotton crop estimate was 100,000 bales above the first one last month, or 12,414,000 bales. Private estimates early in the week were lower than the week before so that the average was close to the government figures. But coming on a market already weakened by large hedge sales, prices broke more than ½¢ for the week. Friday, when the report was released, prices at first rallied $1 a bale, later lost 30 points to close 15 to 20 points lower for the day. The week's losses were from 54 to 72 points.

The October position closed at 8.68¢, compared with 9.35¢ a week earlier; December 8.89 against 9.54; January 8.96 against 9.64; March 9.12 against 9.81; May 9.28 against 9.98; and July 9.43 against 10.15.

The acreage plowed under by farmers was put at 10,396,000 acres, but owing to a smaller abandonment of total acreage than had been estimated the increase of 0.8% was shown. The September 1 condition was put at 67.5%, compared with 74.2% as of August 1. Total acreage was 30,036,000 acres, compared with 29,704,000 forecast a month earlier. Without the reduction made under the Adjustment Plan, production would have been 16,500,000 bales, the third largest on record, according to the department.

Ginning figures up to September 1 were 1,394,220 bales, compared with 865,232 last year.

The Bureau of Agricultural Economics gave the following comparative figures for the foreign crops: China, 2,994,000 bales, or 32% higher than last year; August 1, Indian crop, 14,031,000 acres, against 13,413,000 a year ago; Egypt acreage, 1,873,000 acres against 1,135,000; Brazil, 650,000 bales against 500,000; Mexico, 223,000 bales against 95,000; and Russia plans 5,100,000 acres.

Forwardings last week were 74,000 bales, up from the preceding week's total of 57,000 bales, but below last

year's by 7,000 bales. The crop estimate held up cotton cloth sales until further developments make the situation more clear.

Week ended September 16. Sustained buying the past week lifted cotton prices considerably above the levels of the week before. Reports of heavy sales of cotton goods at the new prices prompted manufacturers to replenish their stocks, and their purchases offset the hedge selling that comes into the market as the crop is picked. Liverpool was steady all week; New Orleans reported a firm basis; and with the strength in securities and wheat, gains aggregated from 86 to 95 points.

At the close the October position sold at 9.54¢, compared with 8.68¢ last week; December 9.76 against 8.89; January 9.87 against 8.96; March 10.04 against 9.12; May 10.21 against 9.28; and July 10.38 against 9.43.

It is difficult to ascribe any one factor as the reason for the rise this week, rather it is a combination of influences. The belief that next year's crop will again be controlled by the government is becoming stronger, with a 25,000,000-acre crop generally expected. Purchases by consumers this week despite prices that reflected the processing tax were a pleasant surprise to manufacturers. Then the extension of a credit to Russia of between $50,000,000 and $75,000,000, which is under negotiation, would mean the disposition of 500,000 bales of cotton if it is effected. Finally, talk of inflation of some sort will not down.

Weather in the last few days also may have been responsible for the fillip to prices. A hurricane over Texas and Mexico and gales on the Atlantic Seaboard have damaged the cotton crop there. Heavy rains in the East have fostered weevil activity.

The August consumption report showed up well as 588,570 bales, against 692,007 in July and 404,497 in August, 1932. For the 12 months ended July 31 consumption totaled 6,135,525 bales, compared with 4,866,016 in the 12 months last season.

Consuming establishments had 1,159,897 bales on hand August 31; public storage and compresses, 5,785,579 bales, compared with 1,087,967 and 6,569,196 as the comparative figures for last year.

Active spindles numbered 25,884,704, compared with 22,045,060 in August, 1932. Exports were 531,000 bales, against 692,000 in July and 452,000 in August, 1932.

Week ended September 23. Pressure for inflation waxed and waned in the last week. Farm interests tried to force the President's hand on the subject, but he countered with an order for an outlay of $75,000,000 to buy cotton and food for the unemployed, and a plan for lending 10¢ a pound on cotton to those farmers who would conform to a crop reduction plan for the next 2 years. On Monday and Tuesday inflation prospects brought a wave of buying, lifting prices from 70 to 81 points, but a decision not to eliminate the processing tax, the rise of sterling to $4.85, and the turn in the inflation outlook set prices back 40 to 46 points on Wednesday, and 40 to 47 points on Thursday. Then the reports of the President's plan lifted prices somewhat at the week-end so that for the week quotations showed a gain of from 36 to 45 points.

October closed at 9.93¢, compared with 9.54¢ last week; December 10.19 against 9.76; January 10.25 against 9.87; March 10.40 against 10.04; May 10.59 against 10.21; and July 10.83 against 10.38.

If all the farmers still holding the present crop were to take advantage of the President's offer of the 10¢-a-pound loan on cotton, it would involve $400,000,000. As a condition to the offer, farmers must reduce their acreage in 1934 by 40% of the average plantings of the last 5 years, and by 25% in 1935 of the same period. Higher prices is the aim; and if the plan goes into effect and reduces the surplus now on hand, the object may be gained. The New York Cotton Exchange revised its estimate of consumption in the past season to 14,405,000 bales, which will reduce the carryover to 11,736,000 bales, which is 1,500,000 less than a year ago.

Much speculation was also caused by the announcement that C. Coles Neidecker, American international banker of Neidecker & Cie. was coming from France with an offer to buy 3,000,000 bales of cotton at a cost of about $150,000,000. Since France uses only 700,000 bales of our cotton a year, many guesses were ventured as to why such a large total would be required. The "war scare" was given as one, with France pictured as storing cotton to supply to her allies; then if France abandons gold she may want to buy the cotton before the price of francs declines; and finally, it was thought that France may be expecting to supply Russia with the staple. How the credit could be arranged was another question.

Cotton takings last week were reported in excess of production for the first time in the last few weeks owing to the inflation scare. August spinning activity was put at 106.7% of capacity, compared with 117.5% in July, and 72.4% in August, 1932. Ginnings to September 16 were put at 3,100,701 running bales, compared with 2,645,574 to the same date last year.

On September 25 cotton futures' trading kept within narrow limits, closing prices showing a net loss of 2 to 9 points. October sales were down to 9.75¢; while March at 10.34¢ to 10.37¢ recorded the smallest decline. Middling spot cotton was 10.05¢ in New York, 10 points lower than Saturday's close.

New York Quotations

September 26, 1933

		Cents
Drills		
38-inch 2.00-yard	yd.	$0.16
40-inch 3.47-yard		.09¾
50-inch 1.52-yard		.22¾
52-inch 1.90-yard		.19
52-inch 2.20-yard		.17
52-inch 1.85-yard		.19½
Ducks		
38-inch 2.00-yard D. F.	yd.	.16
40-inch 1.45-yard S. F.		.22⅞
72-inch 1.05-yard D. F.		.31½
72-inch 16.66-ounce		.34
72-inch 17-21-ounce		.35
MECHANICAL		
Hose and belting	lb.	.32
TENNIS		
52-inch 1.35-yard	yd.	.24¾
***Hollands**		
GOLD SEAL		
30-inch No. 72	yd.	.19½
40-inch No. 72		.21½
RED SEAL		
30-inch	yd.	.17
40-inch		.18½
50-inch		.24½
Osnaburgs		
40-inch 2.34-yard	yd.	.14⅛
40-inch 2.48-yard		.13⅜
40-inch 3.00-yard		.10⅞
40-inch 10-ounce part waste		.15½
40-inch 7-ounce part waste		.11¾
37-inch 2.42-yard		.13⅝
Raincoat Fabrics		
COTTON		
Bombazine 60 x 64	yd.	.10¾
Bombazine 60 x 48		.10
Plaids 60 x 48		.10½
Plaids 48 x 48		.10¼
Surface prints 60 x 64		.12¾
Surface prints 60 x 48		.11¾
Print cloth, 38½-inch, 64 x 60		.07
Print cloth, 38½-inch, 60 x 48		.06
SHEETINGS, 40-INCH		
48 x 48, 2.50-yard	yd.	.12
48 x 48, 2.85-yard		.09⅝
64 x 68, 3.15-yard		.10⅞
56 x 60, 3.60-yard		.09⅞
44 x 48, 3.75-yard		.08¾
44 x 40, 4.25-yard		.07⅝
SHEETINGS, 36-INCH		
48 x 48, 5.00-yard	yd.	.06¼
44 x 40, 6.15-yard		.05½
Tire Fabrics		
BUILDER		
17¼ ounce 60" 23/11 ply Karded peeler	lb.	.39
17¼ ounce 60" 10/5 ply Karded peeler	lb.	.36
CHAFER		
14 ounce 60" 20/8 ply Karded peeler	lb.	.39
12 ounce 60" 10/4 ply Karded peeler	lb.	.35
9¼ ounce 60" 20/4 ply Karded peeler	lb.	.41
9¼ ounce 60" 10/2 ply Karded peeler	lb.	.36
CORD FABRICS		
23/5/3 Karded peeler, 1 1/32" cotton	lb.	.42
23/4/3 Karded peeler, 1 1/32" cotton	lb.	.43
15/3/3 Karded peeler, 1 1/32" cotton	lb.	.40
13/3/3 Karded peeler, 1 1/32" cotton	lb.	.39
7/2/2 Karded peeler, 1 1/32" cotton	lb.	.37
25/5/3 Karded peeler, 1¼" cotton	lb.	.51
23/5/3 Karded Egyptian, Egyptian upper cotton	lb.	.51
23/5/3 Combed Egyptian	lb.	.56
LENO BREAKER		
8¼ ounce and 10¼ ounce 60" Karded peeler	lb.	.34

*Prices for 1,200 yards of a width or over.

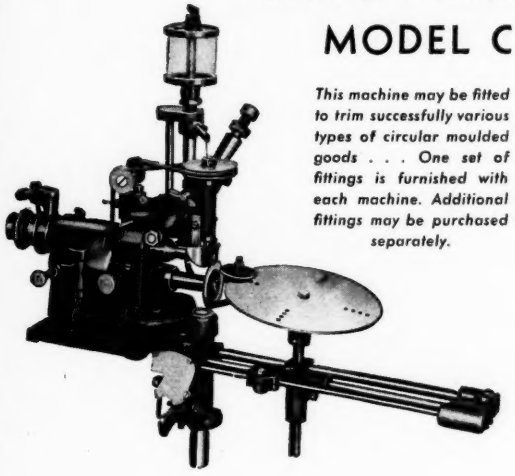
Cotton Fabrics

DUCKS, DRILLS, AND OSNABURGS. Market prices receded further during the first half of September. Since then, however, arose a brisk demand for fabrics on contracts covering future deliveries at advanced prices. The largest consumers are showing very active interest in providing for their future requirements; but the miscellaneous trade has not yet evinced much

(*Continued on page* 68)

USMC TRIMMING MACHINE

MODEL C

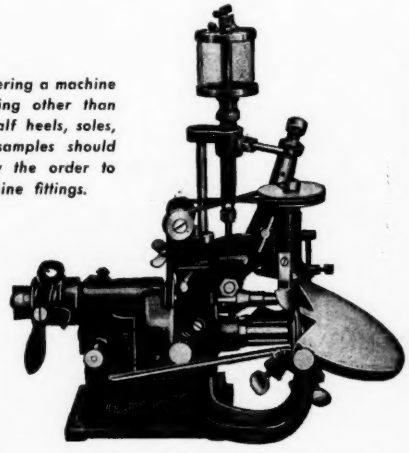


This machine may be fitted to trim successfully various types of circular moulded goods . . . One set of fittings is furnished with each machine. Additional fittings may be purchased separately.

A new and improved machine for trimming the overflow on all types of moulded rubber heels, soles, taps, and miscellaneous moulded rubber goods of similar construction.

Oil is the standard means of lubrication. A water tank is shipped, only when specifically ordered, at an extra charge.

When ordering a machine for trimming other than regular half heels, soles, or taps, samples should accompany the order to determine fittings.



UNITED SHOE MACHINERY CORPORATION

140 Federal Street, Boston, Mass.

Auburn, Maine.....108 Court
Brockton, Mass.....93 Centre
Chicago, Ill.500 South Franklin
Cincinnati, O.407 East Eighth
Haverhill, Mass.....145 Essex
Johnson City, N. Y...276 Main
Lynn, Mass.....306 Broad
Marlboro, Mass.....11 Florence
Milwaukee, Wis.922 No. Fourth
New Orleans, La..216 Chartres
New York, N. Y.110 Fifth Ave.
Philadelphia, Pa.221 No. 13th
Rochester, N. Y.....130 Mill
St. Louis, Mo.....1423 Olive
San Francisco, Calif. .....859 Mission

Regular and Special Constructions

of

COTTON FABRICS

Single Filling Double Filling

and

ARMY

Ducks

HOSE and BELTING

Ducks

Drills

Selected

Osnaburgs

Curran & Barry

320 BROADWAY

NEW YORK

Cotton Fabrics

(Continued from page 66)

interest. A much better market is expected through October. Prices being quoted include the processing tax.

RAINCOAT FABRICS. The raincoat season is now at its height, and all manufacturers report very good business in all types of raincoats in both high- and low-price grades. Preference tends strongly toward light rather than heavyweight coats.

SHEETING. The past few weeks saw a good volume of business at ½¢ a yard above the last quoted low prices. Goods for nearby delivery are very well taken up; which point is always an indication of market strength. Mills are holding firm for higher price levels.

TIRE FABRICS. Egyptian qualities were not quoted in September. Prices on American grades were unchanged.

Crude Rubber

(Continued from page 58)

July figures on pneumatic casings are lower than in June, but show improvement over 1932 levels. Shipments amounted to 5,497,191 casings, 12.8% under June, but 128.7% over July, 1932. Production was 5,713,626, 6.3% less than June, but 58.0% above July, 1932. Casings on hand were 6,844,006 units, 3.5% over June 30 and 10.3% over July 31, 1932.

August production of automobiles was 236,480 passenger cars and trucks for the United States, compared with 233,088 in July and 90,325 in August, 1932. For the first 8 months of the season production was 1,476,678 units, against 1,070,916 in the same 1932 period.

Output for the September 16 week was 48,053 units, compared with 40,367 in the preceding week, and 21,472 in the corresponding week of last year. Production was slightly under the usual seasonal increase, but many producers went back to full-time schedules. Ford output is now 14,000 units weekly, Plymouth's 9,075. Retail sales for the first 3 weeks in September are said to compare well with those in August, with no reaction evident.

The week's business in the Outside Market was characterized as fair, with light tonnage being sold. Buyers were bidding about ⅛¢ under the market toward the week-end. A few manufacturers were brought into the market by fears of inflation, but not enough to cause an appreciable rise in tonnage sold.

Spot ribbed smoked sheets were 7⅝¢, compared with 7¼¢ the week before; November-December 7⅞ against 7⅜; January-March 8⅛ against 7⅝; and April-June 8⅜ against 7⅞.

Rubber fell 35 to 40 points on the exchange on the morning of September 25, but rallied in the afternoon and closed steady with only 15 to 21 points lower. December was trading at 8.05 to 8.06¢ compared with 8.20¢ on Saturday.

Actuals were ⅛¢ down from Saturday's prices; spot ribs were 7½¢ to 7⅝; standard thin latex 8½¢; and browns and ambers were unchanged.

On September 27 crude rubber futures showed signs of strength at the opening, but the burden of the general outside trend was too heavy. The market opened 2 to 10 points higher and sagged off to close 3 points lower to 3 points higher. Sales totaled 2,360 tons.

Testing Floor Wear

THE heavy traffic of industrial tractors and trailers frequently causes huge repair bills for the maintenance of the floors in plants, loading platforms, and docks. For the purpose of comparing the relative wear caused by metal wheels and rubber wheels in such service an exhaustive investigation was made by the engineering department of The B. F. Goodrich Co., Akron, O. These tests were conducted on 2 identical disks of reenforced concrete, using the same mixture found in standard floor practice. These disks were 36 inches in diameter and 2½ inches thick, built with one ⅞-inch wide expansion joint and one ⅜-inch wide standard section joint. The wheels used were a metal wheel and one equipped with a roller-type compound tire. Each wheel was 9 inches in diameter with 1¾-inch face. The load on each wheel during the tests was 383 pounds. The radius of each wheel path was 14⅝ inches.

The apparatus is pictured with the rubber tired wheel under test. The speed was maintained at 83 r.p.m. Under these conditions the metal wheel broke the concrete badly both at the expansion joint and the standard section joint, as well as wearing down the concrete along the path of the wheel after 44 minutes of operation, or 3,632 revolutions of the wheel. The rubber tired wheel, after being run continuously on the concrete disk for 46 hours, 231,650 revolutions, had made no effect on the concrete either at the joints or in the cutting of any path.

Goodrich Floor Wear Tester

Pine Tar

THE value of pine tar as a rubber softener, especially in carbon black stocks, is well known, and its widespread use has created the difficulty of devising satisfactory analytical methods for its determination in mixtures with rubber, and especially in the presence of other softeners such as resins and pitch. M. Pontio, whose classical work on rubber analysis has been invaluable to rubber chemists, contributes a workabue method,[1] which is reasonably accurate.

The principle of the method is to isolate the phenols (introduced in the pine tar) from the mixture and compare them with the phenols found in a standard reference sample of the tar. The standard is prepared by adding 0.2 gr. of Norwegian tar to 15 ccs. of glacial acetic acid, heating on the water-bath for 10 minutes, adding 15 ccs. of distilled water and then 20 or more ccs. of dilute caustic soda till the mixture is alkaline to litmus. The mixture is then acidified with acetic acid, shaken with 20 ccs. of Chloroform, filtered, and 4 drops of Milton's reagent are added. The liquid is then brought to the boil; 50 ccs. of cold distilled water are added to separate the chloroform layer, which is decanted off; and the residue, concentrated to about 10 ccs., serves for reference.

The test is made by extracting 1-2 gr. of sample with boiling alcohol, evaporating to dryness, taking up with a little caustic soda solution, and proceeding as with the reference sample. The 2 are compared colorimetrically, and the amount of tar thus calculated.

[1] *Ann. chim. anal. chim. appl.*, 14, 339 (1932).

U. S. Crude and Waste Rubber Imports for 1933

	Plantations	Latex	Paras	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Totals 1933	Totals 1932	Balata	Miscellaneous	Waste
Jan. .....*tons*	30,123	680	297	10	..	..	..	31,110	31,298	8	516	..
Feb.	18,407	246	217	5	..	..	..	18,875	30,546	16	483	1
Mar.	27,074	528	269	8	..	..	..	27,879	42,382	49	836	..
Apr.	18,436	654	369	..	..	..	..	19,459	37,017	14	463	10
May	26,770	629	147	10	..	..	..	27,556	32,224	47	628	..
June	22,086	451	192	..	..	..	..	22,729	41,394	463	574	..
July	43,155	502	631	2	..	..	..	44,290	31,078	356	646	..
August	43,524	710	568	..	..	..	..	44,802	34,219	68	801	2
Total, 8 mos., 1933.....*tons*	229,575	4,400	2,690	35	..	..	..	236,700	.....	1,021	4,947	13
Total, 8 mos., 1932.....*tons*	276,892	2,327	816	123	..	..	..	.....	280,158	422	4,597	114

Compiled from The Rubber Manufacturers Association, Inc., statistics.

CLASSIFIED ADVERTISEMENTS

SITUATIONS WANTED

EXPERIENCED SALESMAN, MECHANICAL RUBBER GOODS, Metropolitan territory. Address Box No. 273, care of INDIA RUBBER WORLD.

GENERAL FOREMAN. PRACTICAL MAN WITH 14 YEARS OF experience in rubberizing all kinds of fabrics for automotive manufacturers and for raincoat materials. Employed at present. Desires new permanent connection. Best of reasons for seeking change. Address Box No. 276, care of INDIA RUBBER WORLD.

GRADUATE INDUSTRIAL CHEMIST: 20 YEARS' experience in the rubber industry covering reclaiming, compounding, factory production methods and equipment, research and sales development, desires position as development chemist or technical sales representative. Accurate, versatile, and resourceful. Best of references. For complete details address R. W. Bixby, Inc., 443 Delaware Ave., Buffalo, N. Y.

MECHANICAL SALESMAN: EXPERIENCED, WITH GOOD record and ability, would like to make change. Well acquainted large industries New York, Pennsylvania, New Jersey, Maryland. Address Box No. 277, care of INDIA RUBBER WORLD.

SALESMAN, WITH 15 YEARS' EXPERIENCE, DESIRES TO REPresent, on commission basis, manufacturers of rubber items for housefurnishings, druggists' sundries, toys, and notion trades. Have large following with 5¢ to $1.00 chain stores, jobbers, and premium users in the New York market. Address Box No. 278, care of INDIA RUBBER WORLD.

SUPERVISOR: MAN THOROUGHLY EXPERIENCED IN PLANT layout, installation for rubber coating fabric work, and all production methods. Address Box No. 279, care of INDIA RUBBER WORLD.

RUBBER CHEMIST, 7 YEARS' EXPERIENCE WITH LARGE concern as analyst, compounder, and development chemist. Experienced as technical supervisor and production foreman. Age 31. Married. Address Box No. 280, care of INDIA RUBBER WORLD.

ASSISTANT SUPERINTENDENT OR GENERAL FOREMAN: EXperienced in both soft and hard rubber mechanicals, calenders, mills, and presses. Knowledge of compounding. Reputed excellent handler of men. Address Box No. 281, care of INDIA RUBBER WORLD.

SITUATIONS WANTED—Continued

CHEMIST, B.SC., WITH COMPOUNDING, TESTING, AND PLANT experience in tires and insulation. Can handle chemical problems, research, and formula work. Competent analyst. Available at once. Address Box No. 282, care of INDIA RUBBER WORLD.

A PRACTICAL CALENDER AND MILL ROOM FOREMAN ON full molded tubes, tires, and mechanical goods of all kinds, also sponge rubber and druggists' sundries. Address Box No. 283, care of INDIA RUBBER WORLD.

POSITION WANTED AS SUPERVISOR OR GENERAL FOREMAN manufacturing auto top, leatherette, Calftex, calendered clothing, suede cloth, rubberizing of all fabrics, backing cloth, gum sheeting, hospital sheetings, gas masks, etc. Practical compounder of all grades of rubber. Understand all machinery and cures, varnishes and embossing. Address Box No. 284, care of INDIA RUBBER WORLD.

FACTORY MANAGER: 20 YEARS' EXPERIENCE rubber adhesive and medicated plasters, surgical dressings, full knowledge of textile processing. Also available for consultations. Address Box No. 285, care of INDIA RUBBER WORLD.

SITUATIONS OPEN

GENERAL FOREMEN FOR RUBBER FOOTWEAR PLANT. MUST have practical experience in every department. State age, experience, education, etc. Address Box No. 274, care of INDIA RUBBER WORLD.

MILL ROOM SUPERVISOR FOR RUBBER FOOTWEAR PLANT. Must have practical experience in all phases of mill room work and knowledge of compounding. State experience, education, age, etc. Address Box No. 275, care of INDIA RUBBER WORLD.

SALES REPRESENTATIVE: MUST BE FAMILIAR WITH rubber trade in Middlewest, excellent record, and some technical ability. Good opportunity for the right man. State full qualifications in application. Address Box No. 286, care of INDIA RUBBER WORLD.

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SPECIAL PURCHASE FROM FISK RUBBER PLANT: 6 ADAMson 60" Mills and 2 Birmingham 60" Mills complete; 1 Fawcus 400 h.p. Gear Reduction Unit; 1 Falk 500 h.p. Gear Reduction Unit; 1 W. & P. 50-gallon Heavy Duty, Double Arm Mixer; 150 Federal Tire Building Machines complete with 2 h.p. A. C. Motors. Send for printed circular listing Vacuum Shelf Driers, Calenders, Pebble Mills, Mixers, Hydraulic Presses, Pumps, etc. CONSOLIDATED PRODUCTS CO., INC., 13-16 Park Row, New York, N. Y.

MR. RUBBER MANUFACTURER!

Don't hold out! Get in on

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Use the upper decks of your presses! Cut your overhead! Stop passing dividends! Don't stay on with a two or a three-day week, but start operating with a full house! Bridge the depression by making a bid for the rubber trade's most unsaturated market—golf balls—used in the Royal and Ancient Game. Let us assist you.

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BAIRD

RUBBER & TRADING CO., Inc.

CRUDE RUBBER
AND
LIQUID LATEX

233 Broadway *New York*

(*Advertisements continued on page* 71)

United States Statistics

Imports of Crude and Manufactured Rubber

	June, 1933		Six Months Ended June, 1933	
UNMANUFACTURED—*Free*	Pounds	Value	Pounds	Value
Crude rubber	51,296,061	$1,780,495	334,892,955	$10,402,688
Liquid latex	1,353,703	66,827	8,687,893	421,252
Jelutong or pontianak	1,044,264	61,229	5,207,560	292,764
Balata	1,701,259	1,514,296	1,998,436	1,548,920
Gutta percha	246,209	10,435	771,859	42,497
Siak, scrap, and reclaimed	520,434	2,140	2,035,262	10,153
Totals	56,161,930	$3,435,422	353,593,965	$12,718,274
Chicle, crude ...*Free*	171,979	$43,973	1,958,220	$504,295
MANUFACTURED—*Dutiable*				
Rubber soled footwear with fabric uppers ...*pairs*	117,623	$17,320	3,693,133	$553,318
Rubber toys	.....	48,717	.....	255,456
Druggists' sundries, n. e. s.	.....	2,565	.....	25,214
Combs, hard rubber...*number*	147,396	4,822	2,169,432	63,850
Golf balls ...*number*	187,434	47,711	636,398	139,809
Tennis and other rubber balls ...*number*	156,690	13,790	1,368,545	66,951
Tires ...*number*	450	2,020	20,648	103,419
Other rubber manufactures	.....	52,203	.....	223,339
Totals	.....	$189,148	.....	$1,431,356

Exports of Foreign Merchandise

RUBBER AND MANUFACTURES				
Crude rubber	2,857,154	$156,168	17,469,514	$718,989
Balata	11,460	1,794	101,083	16,026
Guayule	2,300	276	5,700	684
Gutta percha, rubber substitutes, and scrap	80	119	7,389	1,266
Rubber manufactures	.....	516	.....	4,820
Totals	.....	$158,873	.....	$741,785

Exports of Domestic Merchandise

RUBBER AND MANUFACTURES				
Reclaimed	498,796	$18,082	3,061,758	$108,944
Scrap	2,629,273	29,420	22,366,867	286,251
Rubberized automobile cloth, *sq. yd.*	45,098	18,177	272,623	112,999
Other rubberized piece goods and hospital sheeting..*sq. yd.*	57,322	20,837	312,530	106,064
Footwear				
Boots ...*pairs*	4,663	10,398	23,012	48,338
Shoes ...*pairs*	10,716	5,016	64,418	26,430
Canvas shoes with rubber soles ...*pairs*	19,493	10,142	137,059	77,732
Soles ...*doz. pairs*	1,213	2,357	5,683	12,200
Heels ...*doz. pairs*	30,834	16,207	156,130	81,687
Water bottles and fountain syringes ...*number*	12,817	4,717	79,122	27,682
Gloves ...*doz. pairs*	3,719	7,216	31,076	60,692
Other druggists' sundries...	.....	25,027	.....	141,120
Balloons ...*gross*	19,941	15,668	93,073	80,675
Toys and balls	.....	3,354	.....	13,213
Bathing caps ...*doz.*	6,210	11,833	42,473	69,858
Bands	14,433	4,500	122,940	33,704
Erasers	24,533	13,096	147,157	80,929
Hard rubber goods				
Electrical goods	119,691	6,822	546,927	48,473
Other goods	.....	8,178	.....	59,560
Tires				
Truck and bus casings, *number*	15,647	250,689	68,817	1,080,184
Other automobile casings, *number*	53,838	350,096	352,989	2,345,014
Tubes, auto ...*number*	43,477	46,182	248,324	250,306
Other casings and tubes, *number*	2,070	4,587	10,838	23,616
Solid tires for automobiles and motor trucks..*number*	497	13,383	3,068	82,764
Other solid tires	88,225	10,486	429,776	49,029
Tire sundries and repair materials	.....	27,892	.....	165,968
Rubber and friction tape	47,033	10,082	264,715	56,209
Belting	138,103	62,942	786,916	343,615
Hose	249,249	61,345	1,308,319	326,433
Packing	77,794	34,643	477,407	184,720
Thread	92,619	52,102	681,400	365,119
Other rubber manufactures	.....	106,115	.....	454,377
Totals	.....	$1,261,591	.....	$7,203,905

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

No.	INQUIRY
1602	Manufacturer of Mahal.
1603	Manufacturer of Vulkabitumen.
1604	Manufacturer of bead rolling machine for toy balloons.
1605	Information wanted on making friction tape.
1606	Manufacturer of plastic rubber.
1607	Manufacturer of Sani-Lastic.
1608	Manufacturer of paper used on the back of soles, patching gum, etc.
1609	Manufacturer of molded rubber boxes.

Golf Ball Imports into the U. S.

	United Kingdom		All Other		Total	
	Number	Dollars	Number	Dollars	Number	Dollars
1929	2,550,201	806,584	156	70	2,550,357	806,654
1930	1,839,921	601,602	1,396	391	1,841,317	601,993
1931	1,260,496	387,513	3,528	842	1,264,024	388,355
1932	1,442,110	334,744	9,335	1,283	1,451,445	336,027

Low and High New York Spot Prices

All Prices in Cents per Pound

	September		
PLANTATIONS	1933*	1932	1931
Thin latex crepe	7½/8¼	4 /5⅛	4⅞/5¾
Smoked sheet, ribbed	6⅝/7¾	3⅞/4⅛	4⅝/5⅜
PARAS			
Upriver fine	8¾/9¾	6¼/7¾	6 /7¼

*Figured to September 26, 1933.

Imports by Customs Districts

	July, 1933		July, 1932	
	*Crude Rubber		*Crude Rubber	
	Pounds	Value	Pounds	Value
Vermont	.....	.....	501	$40
Massachusetts	20,659,992	$865,601	4,216,669	153,706
New York	73,096,781	3,237,717	55,665,338	1,635,097
Philadelphia	2,075,058	73,502	703,360	16,894
Maryland	1,569,988	58,799	4,322,986	127,510
Georgia	.....	.....	1,250,374	37,351
New Orleans	314,868	11,469	.....	.....
Los Angeles	3,535,116	126,929	6,355,163	155,007
San Francisco	58,272	2,786	300,320	11,310
Oregon	.....	.....	11,200	570
Ohio	34,419	1,944	27,852	2,757
Totals	101,344,494	$4,378,747	72,853,763	$2,140,242

* Crude rubber including latex dry rubber content.

World Rubber Shipments—Net Exports

	Long Tons—1933				
British Malaya	Apr.	May	June	July	Aug.
Gross exports	36,752	42,902	41,411	50,531	52,266
Imports	7,758	13,664	16,538	18,772	17,869
Net	28,994	29,238	24,873	31,759	34,397
Ceylon	4,582	4,643	5,198	4,201	*5,692
India and Burma	272	475	377	271	....
Sarawak	624	1,091	1,149	1,358	955
British N. Borneo	*400	*400	*400	*400	*400
Siam	235	359	632	797	870
Java and Madura	5,226	6,782	7,352	7,367	....
Sumatra E. Coast	5,969	7,298	6,654	8,580	....
Other N. E. Indies	8,147	13,195	14,779	16,534	....
French Indo-China	1,122	*1,436	*1,126	*1,361	*1,325
Amazon Valley	556	918	704	913	....
Africa	*100	*100	*100	*100	*100
Totals	56,227	65,935	63,344	73,641	....

* Estimate. *Compiled by Rubber Division, Washington, D. C.*

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

No.	COMMODITY	CITY AND COUNTRY
†5,462	Mattresses and pillows	Johannesburg, South Africa
†5,469	Elastic fabric for corsets and surgical belts	Izmir, Turkey
†5,484	Household and druggists' sundries	Buenos Aires, Argentina
†5,488	Bathing suits, caps, and slippers, druggists' sundries, belting, tubing, etc.	Rio de Janeiro, Brazil
†5,489	Hose	Alexandria, Egypt
†5,504	Soles and heels	Brussels, Belgium
†5,548	Fabric and rubber shoes, etc.	Casablanca, Morocco
†5,577	Druggists' sundries, shoe heels, and transmission or conveyer belting	Habana, Cuba
†5,583	Rubberized fabric, etc.	Istanbul, Turkey
†5,588	Nipples, toilet articles, garden hose, and toys	Kaunas, Lithuania
‡5,610	Tires and tubes	Bombay, India
*5,635	Erasers	Brno, Czechoslovakia
*5,646	Seamless goods	Kassel, Germany
*5,658	Soles and heels	Zwolle, Netherlands
‡5,695	Sterilized rubber bandages	Montreal, Canada
‡5,717	Corset elastic	Mexico, Mexico
*5,734	Rubberized raincoat fabrics	Amsterdam, Netherlands

*Purchase. †Purchase and agency. ‡Either.

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Crude Rubber
Liquid Latex
Carbon Black
Clay

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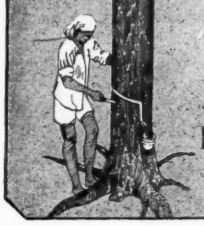
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Classified Advertisements

Continued

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ENGLISH MANUFACTURER OF DIPPED RUBBER GOODS (Latex) about to install necessary machinery, requests manufacturers of hand and automatic dipping, rolling, stripping, and vulcanizing plant, etc., to submit catalogs, prints, and prices without delay. A. O. Box 46, Gordon & Gotch, Ltd., 75/9 Farringdon St., London, England.

WANTED: SECOND-HAND BANBURY MIXER, SIZE TO BE either #9, #11, or #27. Must be in first-class condition. Purchasing Dept., Jenkins Bros., 510 Main St., Bridgeport, Conn.

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RUBBER MACHINERY
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Morris Trimming Machines
are used by the leading rubber manufacturers of the world.
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Operating, Globe, Angle, or Check Valves—Hydraulic Presses, Accumulators, Pumps, etc.—For almost any size or pressure.
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SANDUSKY, OHIO

UNION TALC COMPANY
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INTERNATIONAL PULP CO.
41 Park Row, NEW YORK, N. Y.
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A hard, stable compound—produced under the exacting supervision of an experienced and up-to-date laboratory.
Aging tests have proved Genasco to be *always* of uniform quality. Shipped to all parts of the world in metal drums. Stocks carried at Maurer, N. J. and Madison, Ill.
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Druggists' Sundries—Surgical Rubber Goods
Elastic Bands—Tubing—Bladders
Rubber Footwear—Rubber Roll Covering
Hand Made and Molded Specialties
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And Sheet Stock
Manufactured from a fine grade of Balata—Properly compounded and deresinated. We guarantee satisfaction to all buyers.
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BROCKTON TOOL COMPANY
103 BELMONT STREET **QUALITY HEEL MOULDS** BROCKTON, MASS.
MOULDS FOR PLAIN AND SPORT SOLES—MECHANICAL GOODS AND SPECIALTIES

Rubber Questionnaire

Second Quarter, 1933*

Reclaimed Rubber	Long Tons: Inventory at End of Quarter	Production	Shipments	Consumption
Reclaimers solely (5)	2,577	9,590	10,608	....
Manufacturers who also reclaim (15)	3,722	12,551	6,103	8,839
Other manufacturers (73)	2,625	.....	.....	9,134
Totals	8,924	22,141	16,711	17,973

Scrap Rubber	Long Tons: Inventory	Consumption	Due on Contracts
Reclaimers solely (5)	15,924	12,250	3,871
Manufacturers who also reclaim (15)	37,363	15,550	8,574
Other manufacturers (9)	182	.....	.....
Totals	53,469	27,800	12,445

Tons of Rubber Consumed in Rubber Products and Total Sales Value of Shipments

Products	Crude Rubber Consumed Long Tons	Total Sales Value of Shipments of Manufactured Rubber Products
Tires and Tire Sundries		
Automobile and motor truck pneumatic casings	§72,409	§$77,669,000
Automobile and motor truck pneumatic tubes	10,976	10,486,000
Motorcycle tires (casings and tubes)	‡	‡
Bicycle tires (single tubes, casings, and tubes)	440	490,000
Airplane casings and tubes	19	72,000
Solid and cushion tires	466	771,000
All other solid tires	40	164,000
Tire sundries and repair materials	1,163	2,256,000
Totals	85,513	$91,908,000
Other Rubber Products		
Mechanical rubber goods	7,088	$16,462,000
Boots and shoes	3,724	7,466,000
Insulated wire and insulating compounds	605	†2,159,000
Druggists' sundries, medical and surgical rubber goods	441	853,000
Stationers' rubber goods	331	319,000
Bathing apparel	381	826,000
Rubber clothing	193	523,000
Automobile fabrics	221	574,000
Other rubberized fabrics	1,051	1,955,000
Hard rubber goods	274	†864,000
Heels and soles	3,947	4,679,000
Rubber flooring	219	398,000
Sporting goods, toys, and novelties	427	2,051,000
Miscellaneous, not included in any of the above items	1,575	2,899,000
Totals	20,477	$42,028,000
Grand totals—all products	105,990	$133,936,000

Inventory of Rubber in the United States and Afloat

	Long Tons: Crude Rubber on Hand	Crude Rubber Afloat
Manufacturers	236,339	8,834
Importers and dealers	61,404	55,098
Totals	297,743	63,932

*Number of rubber manufacturers that reported data was 158; crude rubber importers and dealers, 40; reclaimers (solely), 5; total daily average number of employes on basis of third week of April, 1933, was 96,097.

It is estimated that the reported grand total crude rubber consumption is 87.2%; grand total sales value, 92%; the grand total crude rubber inventory, 89.4%; afloat figures unavailable; the reclaimed rubber production, 94.6%; reclaimed consumption, 80.4%; and reclaimed inventory 69.6% of the total of the entire industry.

†One company did not report its sales, but did report crude rubber consumption, stocks, etc.

‡Included in automobile and motor truck pneumatic casings. §Includes motorcycle tires (casings and tubes).

Compiled from statistics supplied by The Rubber Manufacturers Association, Inc.

Rubber Goods Production Statistics

		1933 June	1932 June
Tires and Tubes			
Pneumatic casings			
Production	thousands	4,880	4,515
Shipments, total	thousands	5,044	8,293
Domestic	thousands	4,320	8,212
Stocks, end of month	thousands	5,292	3,700
Solid and cushion tires			
Production	thousands	15	11
Shipments, total	thousands	15	22
Domestic	thousands	14	22
Stocks, end of month	thousands	20	23
Inner tubes			
Production	thousands	4,358	4,223
Shipments, total	thousands	4,622	7,394
Domestic	thousands	4,575	7,336
Stocks, end of month	thousands	4,878	3,943
Raw material consumed			
Fabrics	thous. of lbs.	19,553	17,480
Miscellaneous Products			
Rubber bands, shipments	thous. of lbs.	313	180
Rubber clothing, calendered			
Orders, net	no. of coats and sundries	....	10,433
Production	no. of coats and sundries	....	15,333
Rubber-proofed fabrics, production, total	thous. of yds.	....	2,243
Auto fabrics	thous. of yds.	603	308
Raincoat fabrics	thous. of yds.	....	744
Rubber flooring, shipments	thous. of sq. ft.	310	546
Rubber and canvas footwear			
Production, total	thous. of pairs	3,732	4,429
Tennis	thous. of pairs	2,153	2,898
Waterproof	thous. of pairs	1,579	1,531
Shipments, total	thous. of pairs	3,925	4,345
Tennis	thous. of pairs	3,085	3,839
Waterproof	thous. of pairs	840	506
Shipments, domestic, total	thous. of pairs	3,857	4,285
Tennis	thous. of pairs	3,025	3,786
Waterproof	thous. of pairs	833	499
Stocks, total, end of month	thous. of pairs	13,922	17,962
Tennis	thous. of pairs	4,485	5,222
Waterproof	thous. of pairs	9,437	12,741
Rubber heels			
Production	thous. of pairs	23,479	11,299
Shipments, total	thous. of pairs	27,717	12,304
Export	thous. of pairs	284	266
Repair trade	thous. of pairs	7,155	3,708
Shoe manufacturers	thous. of pairs	20,278	8,330
Stocks, end of month	thous. of pairs	18,402	27,736
Rubber soles			
Production	thous. of pairs	6,094	2,461
Shipments, total	thous. of pairs	6,786	2,500
Export	thous. of pairs	5	5
Repair trade	thous. of pairs	395	133
Shoe manufacturers	thous. of pairs	6,386	2,362
Stocks, end of month	thous. of pairs	2,228	2,374
Mechanical rubber goods, shipments			
Total	thous. of dollars	3,924	2,672
Belting	thous. of dollars	865	526
Hose	thous. of dollars	1,471	1,095
Other	thous. of dollars	1,588	1,051

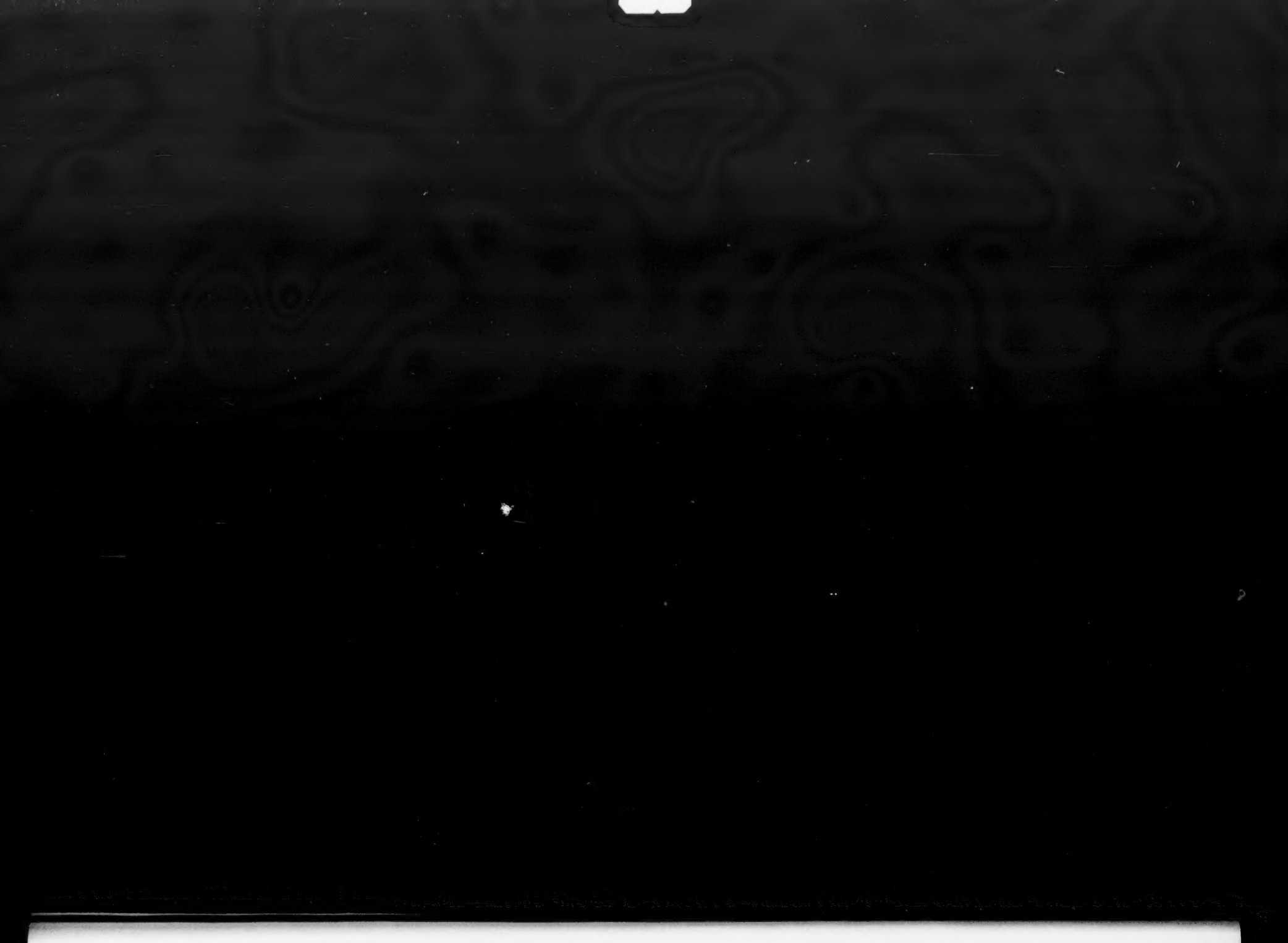
Source: *Survey of Current Business,* Bureau of Foreign & Domestic Commerce, Washington, D. C.

London Stocks, July, 1933

London	Landed Tons	Delivered Tons	Stocks, July 31: 1933 Tons	1932 Tons	1931 Tons
Plantation	3,489	5,336	41,132	48,798	81,241
Other grades	..	7	46	44	44
Liverpool					
Plantation	*879	*1,617	*58,681	*57,243	*54,833
Total tons, London and Liverpool	4,368	6,960	99,859	106,085	136,118

*Official returns from the recognized public warehouses.

Plantation Rubber Crop Returns by Months

1933	Borneo (26 Companies) Long Tons	Index	Ceylon (102 Companies) Long Tons	Index	India and Burma (21 Companies) Long Tons	Index	Malaya (338 Companies) Long Tons	Index	Netherlands East Indies: Java (60 Companies) Long Tons	Index	Sumatra (60 Companies) Long Tons	Index	Miscellaneous (8 Companies) Long Tons	Index	Total (615 Companies) Long Tons	Index
January	360	73.6	1,124	55.1	120	21.4	12,457	100.2	2,556	97.3	3,837	95.2	124	68.5	20,578	92.0
February	323	66.1	905	44.3	46	8.2	11,628	93.5	2,698	102.7	4,207	104.3	54	29.8	19,861	88.8
March	314	64.2	992	48.6	126	22.4	10,505	84.5	2,752	104.8	4,143	102.8	93	51.4	18,925	84.6
April	300	61.3	1,242	60.9	139	24.7	10,523	84.6	2,864	109.1	3,824	94.8	121	66.9	19,013	85.0
May	328	67.1	888	43.5	117	20.8	11,696	94.1	3,024	115.2	4,138	102.6	135	74.6	20,326	90.9
June	329	67.3	1,017	49.8	40	7.1	12,369	99.5	2,985	113.7	4,210	104.4	139	76.8	21,089	94.3
July	350	71.6	1,221	59.8	38	6.8	12,507	100.6	2,897	110.3	4,518	112.1	140	77.3	21,671	96.9
7 months ending July, 1933	2,304	...	7,389	...	626	...	81,685	...	19,776	...	28,877	...	806	...	141,463	...
1932	2,254	...	7,826	...	742	...	87,742	...	17,724	...	29,646	...	1,116	...	147,050	...

Note: Index figures throughout are based on the monthly average for 1929=100. Issued August 28, 1933, by the Commercial Research Department, The Rubber Growers' Association, Inc., London, England.